BUSINESS

AIR TRANSPORTATION

VOL. 22, No. 5 MAY, 1953

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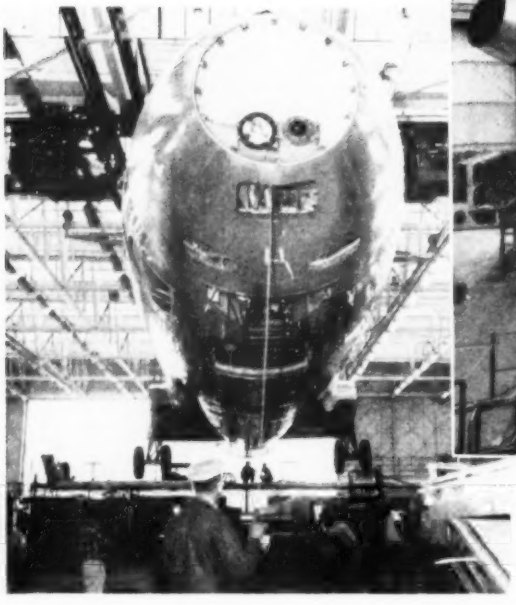

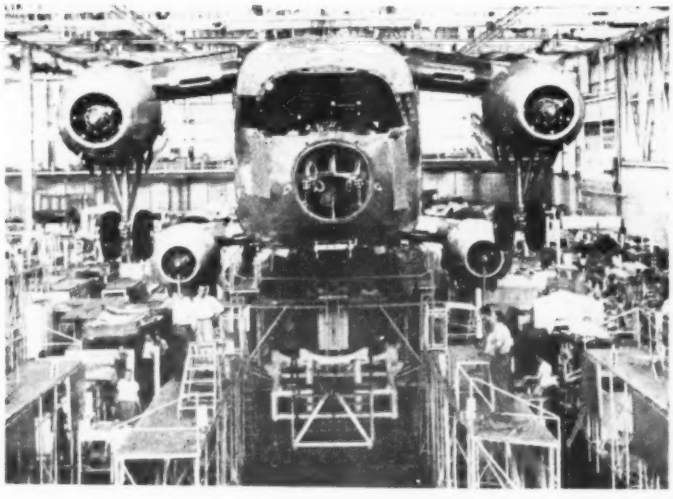

SPECIAL AIRCRAFT MANUFACTURERS ISSUE

THE WORLD'S FIRST AND ONLY AIR CARGO MAGAZINE

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AIR TRANSPORTATION

The World's First and Only Air Cargo Magazine . . . Established October, 1942

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AIR TRANSPORTATION, published once each month, thoroughly covers the entire air cargo industry for the benefit of all those engaged in shipping and handling domestic and international air freight, air express, and air parcel post, as well as using the domestic and international air mail services. Included in AIR TRANSPORTATION'S wide coverage are: air shipping, cargoplane development, rates, packaging, materials handling, documentation, air cargo terminal development, insurance, routing, interline procedures, new equipment, commercial airlines, military air transport service, air freight forwarders, personnel and business air travel.

Subscription rate for United States and Possessions, $5.00 for one year, $8.00 for two years, and $11.00 for three years; foreign countries, $6.00 for one year, $10.00 for two years, and $14.00 for three years. Individual copies, 50 cents each.

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5 London St., London, W. 2, England

AIR TRANSPORTATION is published by Import Publications, Inc., Ten Bridge Street, New York 4, N. Y.; also publishers of Custom House Guide, American Import & Export Bulletin, and Air Shippers' Manual.

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10 BRIDGE ST., NEW YORK 4, N. Y.
Phone: WHitehall 4-2898

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Vol. 22, No. 5 May, 1953

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What's new in transport design? Here are two suggestions that might revolutionize the entire industry!

Plans for the Future

By James V. Martin, Capt. (Ret.)

U. S. M. S.

INTERNATIONAL COMMERCE, for the United States at least, depends largely on transoceanic shipping. This is true whether one considers steamships to do the job or airplanes. The ocean is a hurdle that must either be crossed or jumped.

At present, all too little has been done in the aviation field to take advantage of the water that covers seven-tenths of the earth's surface. To be certain, giant flying ships have been built and used, but hardly to any great extent. Yet flying ships may someday point the way toward the transoceanic movement of cargo comparable in payload to that of an ocean freighter. Does this sound far fetched? Not at all.

One of the obstacles holding back the development of larger land-based air-freight carriers is the fact that the plane rests on air. Air in the tires of an aircraft support that aircraft under enormous pressure, but were that transport supported by water, which is 800 times heavier than air, the problem of pressure would be eliminated, and more cargo could be carried on the one transport than a land-based plane had carried before. Put an aircraft into the water that has a double fuselage, or twice the cargo capacity of the standard one fuselage type plane, and the transport's payload comes to an altogether enormous figure. Needless to say, the double fuselage affords greater stability to the craft as well as greater capacity for its cargo.

Some preliminary work concerning a double fuselage water-based air cargo transport was begun by Howard Hughes and myself as far back as 1942 (see AIR TRANSPORTATION, October, 1942 and 1952). Sometime later Hughes finally switched to the unstable central hull flying boat, and the double fuselage plane, for all its obvious advantages of stability in a rough sea, still needs a champion and visionary to show the world what it can do.

It may even take another war to make our department heads in Washington sit up and realize that you don't need costly airstrips which may at any time be blasted out of existence for water-based carriers. Land-based transports have to land on smooth surfaces that, as the planes become larger, require more area, which in turn is more vulnerable to attack. But drop sixty tons of bombs into an ocean, lake, harbor or river, and the plane can still set itself down to deliver its load.

Wing area is still another area of attack, not in war but for purposes of creating an airplane of greater efficiency and economy. As transports—land or water-based—grow larger, they require a greater wing span for their take-offs and landings. It took 12 years for an inventor to introduce the retractable landing gear which decreases drag on a plane in flight, enabling it to operate more efficiently and to fly farther than it would without retracting its gear. How long would it take to introduce the overlapping telescopic wing principle, do you suppose? Yet the advantages are just as great, if not greater, than those of the retractable chassis.

The principles are really simple. Once clear of the earth's surface, a plane increases its speed many times. Its large wing area has helped it clear the ground and to fly at low speed. But as its speed increases, the wing area's usefulness decreases until about half of it creates a drag that holds the plane back and consumes fuel without any useful return. For the sake of illustration, let us take two of the world's fastest transports, the *Comet* and the *Canberra*. The increased drag due to their extended wing areas cuts down their speed by about 30 per cent, burning fuel that might otherwise take them farther along the way, limiting also their useful load capacities to 2000 miles. If an airplane needs 1000 square feet of wing area for reasonable alighting speed, at speeds above 300 mph, the plane can fly, climb and control perfectly with half of its 1000 square feet of wing area. The best way to get rid of the extra 500 square feet is to telescope the wings in flight, a principle no more impracticable than retracting wheels.

For all practical purposes, the overlapping telescopic wing affords the greatest reduction of drag ever conceived. It answers exactly the airfreight industry's cry for a faster, more economically operated cargo plane, and its value in time of war is at this time inestimable.

Despite the present opposition from the military and the aircraft industry, similar in fact to their opposition to the introduction of the Biconvex wing, without which no airplane

(Continued on Page 29)

SALUTE TO MANUFACTURERS

Milton A. Caine, *managing editor*

FIFTY YEARS AGO an odd-looking contraption of cloth and wires lifted itself off the ground and for 12 seconds stayed aloft in the air. Thus man's dream of using the air for transportation came true. Today man looks to greater accomplishments, trips to the moon and perhaps farther, and tomorrow those too will come true. Within 50 years man has learned to fly faster than sound, can he not, within the next 50 years or less learn to break free of the earth's gravitational pull and land on the moon? This idea is not at this time so far-fetched as it may have seemed 50 years ago, immediately after Kitty Hawk.

Man's achievements in the air have been staggering. He now hurls himself through space at stupendous speeds. At first he carried a bag of mail in the open cockpit behind him, now he carries many tons of an amazing array of property to all parts of the world, and in the future he will carry more. Could anyone at Kitty Hawk foresee that giant tractors and horseless carriages would soar through the air at speeds surpassing 300 miles per hour? Could anyone at that time foretell that a giant industry would mushroom up from the thousands of imaginations fired by the flight at Kitty Hawk to employ thousands of individuals and spend billions of dollars in order to perfect better, bigger, faster vehicles for transporting man and his property from one end of the earth to another? The world of wings was born 50 years ago, today it is bigger than ever and it is still growing.

This growth, of course, was due and is still due largely to the airplane manufacturers who have striven consistently to anticipate the needs of the future; for in such ways is the future of the world advanced. When nations went to war, they produced fighters and bombers; when defense and industry demanded faster shipping, they produced cargo planes. Even now, bigger and faster fighters and bombers are being conceived, and bigger and faster airfreight carriers are also being conceived. Such illustrious names in the aviation industry as Douglas, Lockheed, Fairchild, Boeing, Chase, Consolidated Vultee are all directing a portion of their energies toward the development of better and bigger airfreighters, some to a greater extent than others. Douglas, which built the world's first plane designed to carry mail, and Lockheed have both made extensive studies of the airfreighting field that point to a brighter future. Both have studied terminal facilities and loading problems and have each evolved effective methods for the faster handling of airfreight. Fairchild has come out with a bigger *Flying Boxcar* having a detachable body that, on the ground, turns into a motor van, and Convair has built the world's largest cargo carrier, the XC-99, capable of flying 100,000 pounds of cargo.

The end is not yet in sight. The better air cargo transport is yet to be built—one that will afford greater economy of operation for the carrier and greater economy in rates for

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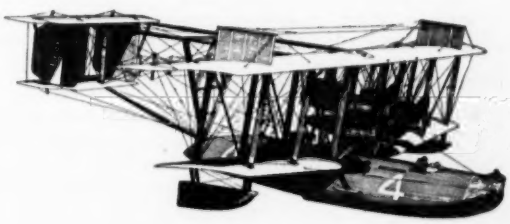
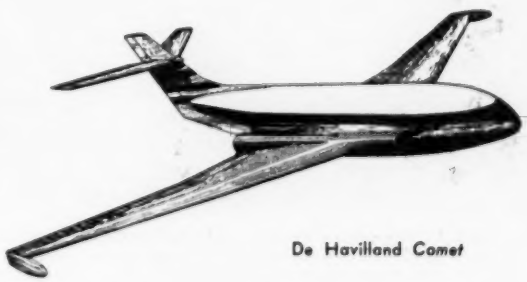


Curtiss NC-4

PAST AND FUTURE—Back in 1919, this bulky biplane, the Curtiss NC-4, was the first flying boat to fly over the Atlantic Ocean, setting the trend in water-based hull lines for years to come. Inefficient by modern standards of design and performance, the NC-4 was nevertheless a miracle of engineering and accomplishment. A more modern miracle, however, is the jet propelled water-based version of the famous De Havilland *Comet*, still to be built. Besides the addition of enormous speed, the *Comet* embodies entirely new principles of dynamics, propulsion and design that make of its ancestor, the NC-4 and even some later transports, relics of a slower age.



De Havilland *Comet*

RECOGNIZING A GOOD THING—Not only does Douglas believe in the future of airfreight, as evidenced by the host of all-cargo DC-6A *Liftmasters* currently in service or on order—Slick has three, The Flying Tigers will shortly have seven—but it is also going all out to publicize the advantages and service of airfreight as well. Here is a sample of the great work Douglas is doing in this direction, five of a series of institutional advertisements currently running in AIR TRANSPORTATION.

the shipper. Other goals have also been set—airfreight terminals that will afford greater mobility and ease in cargo handling, loading devices such as ramps and elevators for quicker handling, uniform floor levels in transports that will allow greater uniformity in handling. When these have finally been reached, the aircraft manufacturers will find others. For they are not content to rest on past and present successes. Instead, they strive always for greater achievements, and as they progress, transportation progresses with them. Their newer gains and advances, transmitted down to the air shipper, whether he be industrialist, exporter, importer or small businessman, all mean newer gains, larger expansion, greater profits. With them rests a substantial portion of our national security and our national prosperity, and through us a substantial portion of the world's as well. The role this country plays as world leader in the ways of peace and commerce is strongly abetted by the makers of our air cargo, military and luxury transports. As a team, we are well nigh unbeatable, and thus shall we remain. As in the past, so too in the future. Douglas, Lockheed, Boeing, Fairchild, Chase, Martin, Consolidated Vultee, Republic Aviation, and many, many others—the team consists only of stars.

To the manufacturer then of the nation's air transports deservedly belongs a portion of our national tribute for keeping the quality of America's air strength, commercial and military, in advance of the rest of the world's.

Convair's famous XC-99, the world's largest land based cargo plane, has recently chalked up 2000 flying hours as well as some record payloads. Considered by many to represent a milestone in the development of cargo aircraft, the sky giant can carry a payload of 50 tons or more. As far back as 1950, the XC-99 carried 101,266 pounds of cargo in one flight from San Diego to Kelly Air Force Base. At another time, it flew a maximum payload of 104,000 pounds. For the most part, most of the cargo flown by the XC-99 has been in direct support of the Korean airlift, but the plane does point a way toward commercial utilization. While serving in the Air Force, and having travelled more than one quarter of a million miles carrying millions of pounds of priority cargo in just four years of operations, the XC-99 has carried cargo for as low as 11 cents per ton mile, according to official records. Though great in achievement, the XC-99 may never be duplicated, says Convair.

CARGO IN THE CLOUDS:

A Down-to-Earth View

by Charles J. Rauch,
Project Sales Engineer, Air Cargo,
Lockheed Aircraft Corp.

THE AIR FREIGHT OPERATOR sells speed—he buys economy.

He is a merchant who deals in speed and its by-products: overnight delivery, low inventory requirements, reduced crating costs, improved handling of perishables and fragile items. With these and related advantages to offer, he is daily becoming of increased importance to the economic lifestream of the nation—to the point that he now requires better and more specific instruments to do the job.

When that merchant searches for such tools, he seeks the airplane which provides all merchandising requirements of his business and which at the same time provides most economical operation. Lockheed Aircraft's engineers feel that that airplane is their principal contribution to the air cargo field. It has many ramifications.

The Lockheed *Super Constellation* for cargo, model 1049B and 1049D, is unsurpassed in economy while meeting every freight airplane requirement—speed, range, payload, simplified cargo handling, and structural strength.

According to Lockheed's cargo project group, direct operating costs of the cargo *Super Constellation* are slightly more than a nickel a ton-mile—at least 10% cheaper than any other current cargo airplane. Effect of this development on the air cargo field will be to promote greater stability of carrier economics and to allow the airfreight operator to enter new areas of competition with surface transportation.

At the same time that it drastically reduces direct costs, this airplane provides equally spectacular performance.

The cargo engineers point out that the transport will cruise at more than 330 miles an hour, and that it has a maximum level flight speed of about 350 mph. With a 36,230-pound payload in transcontinental flight—and only slightly less in trans-oceanic operation—it has an extremely high payload-operating weight ratio.

In transatlantic operation the cargo *Super Constellation* does not suffer payload loss because of range. With zero wind, it can fly more than 4100 miles, with 2½ hours of fuel reserves.

Despite its long-range capabilities, the same plane is also adapted to short-haul routes.

The transport is equipped with Wright turbo-compound engines—the most efficient reciprocating engine available today. Rated at 3250 hp, these engines provide extreme range along with operational economy by capitalizing on the energy usually lost in exhaust gases.

Power recovery turbines add 15-20% in takeoff power and provide almost 20% saving on fuel during cruise. Lockheed cargo transports became first to offer this power saving feature.

The airplane's main compartment floor area of 744 square feet is over 25% greater than that of any other commercial cargo transport. Its wide center of gravity travel and interior cargo-handling equipment simplify loading and off-loading.

With a decade of development behind it, the cargo *Super Constellation* is no "unproved" airplane. According to Lockheed engineers, it is one which offers greater advances in cargo movement than any aircraft flying today.

Among far-reaching contributions to air cargo development is Lockheed's introduction of the most advanced and rugged flooring ever built into an airplane. All-magnesium flooring absorbs shock and provides load-bearing capacity of 300 pounds a square foot or 1000 pounds per lineal foot. Its light weight increases payload; its surface will not scuff; cargo slides easily on it; and cleaning can be accomplished with hose and water. The floor is water-tight.

Other built-in-the-plane advantages

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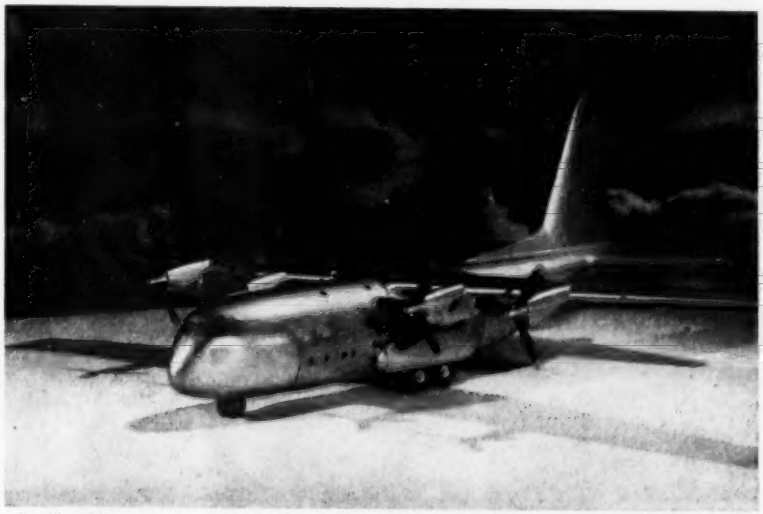
TURBO-PROP AIRFREIGHTER



Lockheed has come up with America's first turbo-prop airfreight transport that has been designed, the company claims, "to fly higher, faster and more economically than any existing military transport." Known as the C-130, this long-range plane has a low-slung fuselage for fast loading, an upswept tail similar to the *Stratofreighter*'s and a rear cargo door that becomes a loading ramp that can either be lowered to the ground or kept at truck bed height. Prototypes of the C-130, which, like the *Stratofreighter*, may eventually be used for flying commercial cargo, are under construction at Burbank, and a quantity production order has been assigned to the firm's plant at Marietta, Ga.

Growth of a Cargo Plane

by William M. Smith

THE EXIGENCIES OF WAR far more than the needs of commerce prove the practicability of air cargo transportation. Even now they dictate the shape and design of the cargo transports, inspiring the development of many revolutionary concepts that might not otherwise have evolved for another dozen years or so. For the cargo transport, as used by the military, has evolved from a single-engine, cloth-covered airplane to the multi-engine highly complex machine with a detachable body that can easily be converted into a motor van.

Whether the plane receives or discharges its cargo through the nose, as with the Douglas *Globemaster*, or through the tail, as with the Boeing *Stratofreighter*, these operations would scarcely have been considered during normal peacetime procedure where cargo was and is still largely carried on combination passenger-cargo planes. Not that war in itself is a desirable time in which to live so that the evolution of cargo transports and transportation may be more quickly accomplished, but war does condense time and bring about with greater rapidity certain advances that might not exist during 'quieter' years. Were it not for World War II, the airfreight industry would now be 10 years behind the stage of its current development, and the big, new industry that it has become, and the profits that have been realized through the use of air shipping would not yet have been worthy of serious consideration.

The development of a cargo aircraft is in itself a dramatic story, showing how size and design are continuously being modified to accommodate larger and heavier cargoes and to anticipate future loads and needs. Since Fairchild Aircraft has, in a sense, pioneered in the development of this type of craft and has brought about its more startling innovations, to trace the development of the *Packet* through to the *Boxcar* and *Skyvan* is, in fact, to keep abreast with the latest in the manufacture of aircraft for cargo carrying purposes.

With the awarding of a contract early during the last war to Fairchild, the C-82 was built. This was designed as a cargo compartment of freight car cubic footage and shape with flight components built around it. But two years of operation and training with the *Packet* disclosed, for example, that forward and downward vision should be improved for greater drop accuracy. The necessity of pin-pointing paradrops of troops and supplies into small drop zones made it expedient to move the flight deck forward and down. Demands on the military for even greater load lifting ability and cargo capacity than the C-82 possessed also indicated the utility of greater engine power and a larger hold.

Thus, the C-119A was born by diverting one of the last C-87s on the production line and modifying it in line with the dictates of experience. The use of the standard C-82 fuselage also expedited flight testing. The *Boxcar* came up with a design gross weight of 32 tons, some 18% greater than the *Packet*, and the cargo capacity was increased when the flight deck made the forward section of the cargo compartment eight feet wide and eight feet high.

This new version of the C-82 was quickly accepted, and when the contract was concluded in 1948, another was received for 37 *Packets* to be designated as C-119Bs. This featured a cargo space 14 inches wider than that of the C-82, or 179 more cubic feet to the capacity. Hardly had the C-119B gone into production when it became subject to more modification. Water-injection type Pratt & Whitney Wasp Majors increased the horsepower of each engine to 3500 and boosted take-off gross weight to more than 73,000 pounds. This also cut several hundred feet off the take-off distance requirements, allowing the plane to clear a 50-foot obstruction on take-off within less than 3100 feet.

The Marine Corps, as well as the Army and Air Force, soon recognized the unique potentialities for an aircraft of this type in USMC operations. The Navy Department obtained eight of the original Packets and designated the type as the R-4Q1. In 1949, the first Air Force order for 37 C-119Bs was followed by another contract calling for an additional 99 C-119s.

While the early C-119s were on the production line, Fairchild designers were busy on another revolutionary airplane which would present great

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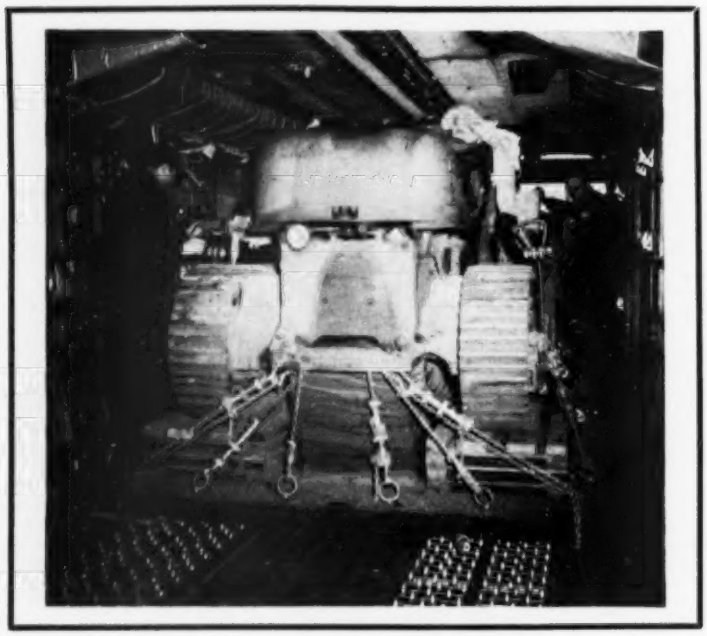
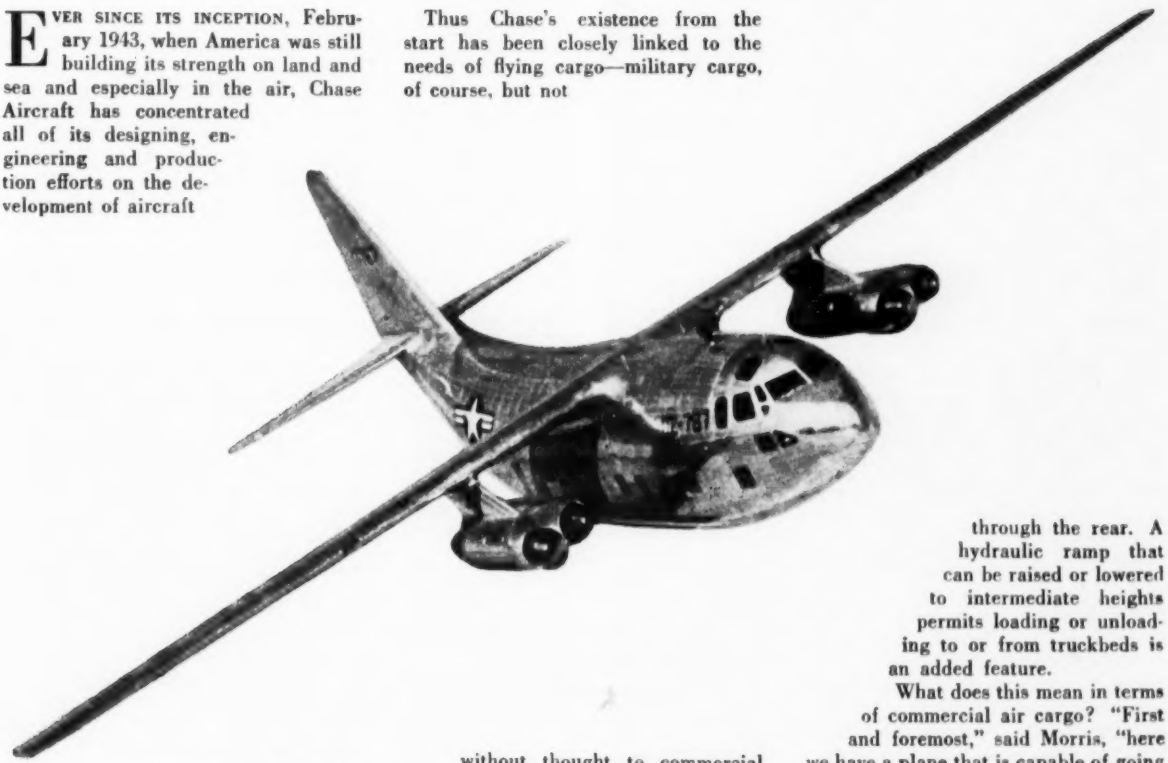


Pictured below is the XC-123A, jet powered sister of the C-123, Chase Aircraft's cargo and troop carrier. Equipped with four turbo-jet engines, the plane has gone through three transformations, from glider to conventional powered transport to jet powered cargo carrier with 3570 cu. ft. for cargo.

Aircraft for Cargo

EVER SINCE ITS INCEPTION, February 1943, when America was still building its strength on land and sea and especially in the air, Chase Aircraft has concentrated all of its designing, engineering and production efforts on the development of aircraft



that can speed the delivery of air cargo at reduced cost. Definitely a new-comer among aircraft manufacturers, the company has nevertheless forged ahead to a respected place in a field held mainly by giants.

Its first contract called for a glider that would allow fighter groups to support and sustain themselves in forward bases by air. Shortly thereafter, the glider was redesigned to include a large cargo compartment, which, however, was not flown until after the end of the war. To answer further demands by the Army, the glider was transformed into an assault aircraft of all metal construction with a cargo compartment and, eventually, a hydraulically operated ramp and door system.

Thus Chase's existence from the start has been closely linked to the needs of flying cargo—military cargo, of course, but not without thought to commercial cargo which is generally as heavy and as bulky and as important to the nation as the other kind. Chase is earnestly interested in air cargo, more so since its C-123B, a medium assault transport currently in quantity production for the Air Force, supplies many of the answers to problems that are at present confronting the industry.

According to Chase's Cornelius T. Morris, the C-123B was designed to land cargo and troops in unimproved fields and to take landings and take-offs in surprisingly short distances. The fuselage is square-shaped, like a stylized boxcar, offering 3570 cubic feet of cargo space. The compartment's floor is relatively low, only 31.6 inches from the ground, and access is provided through the rear. A hydraulic ramp that can be raised or lowered to intermediate heights permits loading or unloading to or from truckbeds is an added feature.

What does this mean in terms of commercial air cargo? "First and foremost," said Morris, "here we have a plane that is capable of going almost anywhere with a substantial payload without regard for what is available in the way of airport facilities. There are a great many sizable communities in the United States today that do not even have rail connections and are dependent entirely on over-the-road truckers. The C-123B is a plane that can serve them."

In this connection, the CAA Office of Airports only recently reported that, of a total of 4067 municipal and commercial type airports in the United States, only 1120 or 27.5% have paved runways. In its study on domestic air cargo potential, the CAA noted that the origination of air cargo is extremely concentrated; 70% of the total tonnage started in the

(Concluded on Page 34)

Portrait OF AN *Airfreighter*

IN THIS ERA of supersonic jet and rocket flight when aerial records are shattered almost with the regularity of newspaper deadlines, discussion of a conventionally-propelled cargo-carrier like the C-97 *Stratofreighter* might seem as pointed to the layman as an account of the design philosophy behind building the *Monitor* and the *Merrimac*.

Actually, the job of this airplane type is as important to the strategy of American air power and to our air growth today as is the shooting job of our fighters and bombers and the commercial job of our airliners. Like an infantry regiment without motor transport or a fleet without speedy supply ships, air power without a depth of fast and rugged cargo transports is a right hand punch with nothing left in reserve.

Boeing's *Stratofreighter* is not as dramatic as its new hangar-mate, the B-47 Stratojet or the B-52 *Stratofortress*, or as handsome as the *Stratocruiser;* but the over one million pounds of freight that one C-97A carried on the Berlin Airlift during its first 27 service test flights is indicative of the type of job that it is doing.

A more recent example is a single cargo of five crated helicopters needed urgently for the evacuation of wounded United Nations troops from the surrounded Hungnam beachhead. Loaded aboard a Pacific Division MATS *Stratofreighter* in Hawaii, the five egg-beaters were flown straight through to Haneda AFB and immediately assembled there for use in Korea.

Four models of this airplane have been built in production quantities by Boeing Airplane Company, for the U. S. Air Force's Strategic Air Command and for the Military Air Transport Service, the world's largest airline. Although Boeing production facilities are dedicated entirely to this military work today, a study of the airplane, its capabilities and its accomplishments should be a worthy subject of air cargo men's attention.

Weighing 148,000 pounds fully loaded, the newest *Stratofreighter* has a cargo volume of approximately 6100 cubic feet, a payload capacity of 53,000 pounds and a top speed at this weight of 344 miles per hour at a range of 1620 miles. Carrying a payload of 30,000 pounds, the range is extended to 3560 miles.

One of the chief factors responsible for the C-97's cargo carrying ability is that it was built from the ground up as a cargo airplane. Although it has always been convertible to other uses—personnel transport, hospital ship, aerial delivery airplane and, more recently, to a tanker—it is important to note that these other uses were developed from the basic *Stratofreighter* cargo design. In contrast to this is the passenger airplane converted to freight use with an inherent waste of space and penalty for loading conveniences.

The C-97 was "born" in June, 1942, three months before the first XB-29 was flown. It was then that Boeing proposed to the Air Force that it build a freight-carrying military airplane able to match the B-29 in speed, range and ruggedness. The first few months of the Pacific war had made it apparent that more rapid transportation of vital men and supplies than could possibly be met by surface ships was needed, and Boeing figured it could supply this need.

This new airplane, Boeing proposed, would utilize wherever possible identical parts used in the B-29, including wings, empennage, engines, landing gear, minor accessories and even the same grades of gasoline, greases and oil.

(Continued on Page 31)

Vickers' Freighter

With Vickers-Armstrongs in England supplying freighter versions of its popular *Viscount*, and British Overseas Airways Corporation having ordered five, further testimony is given to AIR TRANSPORTATION's claim that more manufacturers, shippers and carriers than ever before are devoting more thought and effort to the needs and services of air cargo.

For its Special Issue devoted to Aircraft Manufacturers, AIR TRANSPORTATION has secured the details concerning the *Viscount* freighter, which are as follows:

Freight Door:

The main freightloading door is situated to the rear of the freight compartment and opens outward and upward leaving a clear rectangular opening 5 ft. 10 in. high by 9 ft. 0 in. Under normal loading conditions the door sill height will be 7 ft. 8 in. from ground level. The door and door locking mechanism will be designed for use with the full normal pressure differential of 6½ lb./sq.in. and thus will permit operation at 20,000 ft. with sea level conditions in the cabin and freight compartment. In order to accommodate the door it will be necessary to sacrifice the rear most window on the port side.

Freight Compartment:

The freight compartment is 46 ft. long with an average width of 9 ft. and a height of 6 ft. 4 in.

The floor assumed will cater for 150 lb./sq.ft. normal floor loading, an additional weight penalty of about 100 lb. would result from designing to 200 lb./sq.ft. should this be required. The floor will be flush and fitted with suitable lashing rings capable of taking ultimate loads of 4000 lb. in the plane of the floor and 2500 lb. vertically. Further lashing points will be provided in walls and ceiling to take ultimate loads of 900 lb. The floor panels are replaceable in the event of damage.

Protection of Windows:

The standard window blinds which slide on rods on either side of the windows are of a stiff, folding type and constitute considerable protection for the windows, and it is probable that even greater protection could be affored if desired by modifications to these blinds whilst retaining their passenger appeal. Accordingly no additional allowance for protective grills has been included in the weight summary.

The standard under-floor cargo holds are unaffected by the freight conversion and provide 236 cu.ft. of additional cargo space.

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USE AIR CARGO

VOL. 22 MAY, 1953 No. 5

PLAN TO JOIN FORCES

Aviation Jubilee Planned

RICHMOND—In celebration of the fiftieth anniversary of powered flight, a Virginia Aviation Jubilee is planned to take place May 10 through 17 that will give the public a full picture of all phases of aviation, tracing its history down through the past 50 years.

Conceived by members of the Civil Air Patrol, the Virginia Division of Aeronautics, private operators, airline representatives and businessmen, the Jubilee has been designed to promote aviation—to show the airplane as a means of transporting property and persons, as an integral part of business, and as an instrument of commerce as well as an instrument for defense. The Jubilee, which has already received the endorsement of the Civil Aeronautics Administration, Virginia's Governor, John S. Battle, and Aviation Commissioner W. Marshall King, is expected to attract about 25,000 persons from the Middle Atlantic Region alone. Included in the celebration will be a salute to the Armed Forces at Richmond's Byrd Field.

Seek All-Cargo Approval

PHILADELPHIA—Three major ports of entry—New York, Philadelphia and Baltimore—have asked the Civil Aeronautics Board to authorize further scheduled transatlantic all-cargo service to Europe and the Middle East. As Walter B. Robinson, senior economic analyst for the Port of New York Authority stated in support of this request, "There is an urgent need for efficient and aggressive development of the transatlantic air cargo market."

Experts from the Defense Department have also testified that there was a defense need for regular all-cargo service across the Atlantic, listing a quarter of a million pounds of freight shipments which the current U. S. flag transatlantic carriers were unable to handle properly within a two and a half month period.

At present, five airlines currently active and one that has not yet started operations are applying for CAB authorization. These are: Seaboard & Western, Transocean, Overseas National, the Flying Tigers and Transcaribbean. European-American makes up the sixth. None of the three cities urging authorization has expressed any preference as to which of the six should be certificated. Rather, the stress was put on the need to encourage the expansion of all-cargo service.

Possible Merger by Slick, FTL Is Up for Approval

BURBANK—Expanded service, greater economy and better earnings represent a portion of the advantages to be gained when the nation's two leading certificated all-cargo airlines—The Flying Tiger Line and Slick Airways—merge. Discussions of a possible merger have been underway for some time, but few details were released. Although approved by the companies' boards of directors, the proposal has not yet been presented to their stockholders and only recently filed with the CAB.

Observers claim that the pooling of resources by the two airlines would result in an all-cargo line as powerful as the combined 'Big 4' in the passenger field. The single resulting airline would become the nation's fifth largest domestic carrier, based on 1952 volumes, and while FTL would emerge as the surviving firm, the new unit would use the names of both companies for the sake of continuity and the trade values that both names have. In terms of service, the single airline would provide wider service, better scheduling and the elimination of duplication of maintenance operations in the cities now served by both lines.

At present, both Slick and FTL operate in most of the large industrial cities in the East and Midwest. However, Slick's routes go mostly over the southern portion of the United States while the Tigers' go mostly over the northern. The merged company would still maintain these routes but duplication would be eliminated in the larger cities without curtailing any of the service. There is a possibility also that airfreight volume would be increased after the firms have been combined. It is almost certain that a consolidation by the two cargo carriers would strengthen their competitive position in the field, creating a better earnings picture for the new airline than has so far been achieved individually.

Both FTL and Slick recently announced the acquisition of new cargo carrying equipment. Besides the present fleet of 2 DC-6A *Liftmasters* and 21 C-46s, Slick has two more DC-6As on order. The Tigers currently are flying 11 four-engined and 25 two-engined transports, but have seven DC-6As on order. These last will increase FTL's cargo capacity by 40%. Once merged, the new company would have a fleet of 67 planes, more than five times the size of any other cargo fleet at present.

Coincident with the news concerning Slick and the Tigers has come news of another proposed merger: that of the Aircoach Transport Association with the Independent Military Air Transport Association. By joining forces, these two groups would then form one large non-scheduled airline organization. No further information concerning this second plan has been forwarded at this time.

Combined Forces

In the very possible event that the proposed merger between Slick Airways and The Flying Tiger Line is approved by the Civil Aeronautics Board and the companies' stockholders, the following facts would result:

- **A total capitalization in excess of $13,000,000 plus an annual business volume of from $45 to $50,000,000.**
- **An airfreight fleet of 67 planes, over five times the size of any other cargo fleet.**
- **A joint system of about 100 cities in the United States.**
- **A position in fifth place as one of the nation's largest domestic airlines.**
- **Increased economy as duplication of services is eliminated.**
- **Robert W. Prescott, now president of the Tigers, will be president of the new firm; Thomas L. Grace now president of Slick, will take charge as executive vice president.**

Last year, the two airlines separately accounted for 95% of all the cargo flown by scheduled all-cargo carriers and 46% of all the cargo flown by the combination and all-cargo lines. With the companies operating as one firm, these figures could very conceivably climb higher.

New *Freighter* Ends Tests

LONDON—All the tests needed for receiving a full Certificate of Airworthiness were completed recently in 10 hours by Bristol's new Mark 32 *Freighter*. The new freighter aircraft, a development of the familiar freight transport already in use in such widely separated areas as England and Australia, contains modifications that have increased its capacity and necessitated a flight test program including all the handling tests ordinarily carried out by completely new prototype aircraft. Six of the Mark 32 have been ordered by Silver City Airways to cope with the rapidly increasing traffic on its air ferry routes over the English Channel.

FEAA AWARD WINNERS

In his position as chairman of the awards committee of the Free Enterprise Awards Association, John F. Budd, editor and publisher, presented the group's 'Business Oscars' to six men who achieved success despite adversity and who best exemplify the American ideal of free endeavor. Two of the award winners were unable to attend the ceremonies held at the Hotel Roosevelt—President Eisenhower and Paul G. Hoffman. Those who attended are shown here with Budd. Reading from left to right, they are: Earl W. Muntz, president of Muntz-TV; Harry Brandt, president of Brandt Theatres; Arthur J. Kinsman, president of Purepac Drug Corp.; Collie M. Weber, president of Weber-Millican; Arthur Murray, president of Murray Dance Studios; and Frank Wangeman, general manager of the Roosevelt Hotel, accepting the award for Conrad Hilton. Free Enterprise Awards Association is a non-profit membership agency chartered under the laws of New York State to 'promote incentive and champion the cause of free enterprise' in the United States.

KLM-FTL Sign Pact

NEW YORK—By signing an interline agreement, KLM Royal Dutch Airlines and The Flying Tiger Line can now offer a wider service to shippers of air cargo. Through this agreement, the 35 cities served by the American carrier are linked to the 103 cities in 66 countries served by the other. The pact was signed by M. E. A. L. de Jong, commercial manager of KLM, and Mayo Thomas, manager of international sales for FTL.

SAS Flies Deadly Vaccine

NEW YORK—One of the weirdest items to come here by way of air cargo was a shipment of deadly hoof and mouth vaccine. Flown from Milan, Italy, on a Scandinavian Airlines System cargo plane, the vaccine was transshipped at this point and flown to Bogota, Colombia. United States regulations do not allow the vaccine to remain in the country for more than a few hours, nor can it at any time touch the ground. To effect the transshipment, then, a bridge was built between the SAS plane and another belonging to Southern Air Transport, which flew the serum down to South America. Hoof and mouth disease no longer afflicts cattle of the United States, but it is still prevalent in some Latin American countries where entire herds of cattle, if afflicted, have to be exterminated. Another shipment of the vaccine is due to arrive again shortly.

Tapes Automatic Flight

NEW YORK—By means of a specially developed device, automatic flight can be 'punched' on a tape before the plane takes to the air. This device, developed for the U. S. Air Force jointly by both Minneapolis-Honeywell Regulator and the Air Research and Development Command, is an intricate electrical 'brain' known as an Automatic Master Sequence Selector (AMSS). With it, no human hands need touch the plane's controls.

The plane's flight plan is divided into sections varying in length from a few seconds to as much as an hour of straight flight time. Through this AMSS, the plane taxis and takes off, raises its landing gear and climbs into the air. It flies to a predetermined point, might alter its direction or altitude and finally lands. The entire flight has then been accomplished without human control. One of the advantages in the AMSS system of automatic flight is the fact that weight and complexity are considerably reduced for more efficient flight control.

Air France Flies New Drug

PARIS—Two hundred vials of acti-dione, Res 8613-10, a drug so new it has not yet been placed on the market, was rushed to France from the United States for emergency delivery to a patient suffering from spine cancer. Flown non-stop from New York by Air France in about 12 hours, the drug has not previously been used by French researchers. It therefore was sent with complete instructions and reference material to aid in its application. Should its application prove successful, Air France will have figured in an exciting episode in medical history.

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AIRDOM

by

Richard Malkin

Consulting Editor
Air Transportation

Admaster Creations Company
Toledo, Ohio
Gentlemen:

I am taking this rather unorthodox opportunity to acknowledge receipt of your booklet, *Fifty Years of Powered Flight*, which you compiled and published in cooperation with the National Committee to Observe the Fiftieth Anniversary of Powered Flight, the Toledo Public Library, and the Historical Division of the United States Air Force.

I agree with the National Committee that it's a fine reference piece, even though there are some glaring omissions; and I might have accepted the gaps in the historical information with a mental shrug had not the Committee, in its form letter to members of the Aviation Writers Association, indicated that "the publishers would welcome receiving suggestions for significant corrections and additions." Which is refreshing, to say the least.

Before I go any deeper into these several inches of black type, I want to admit publicly that my principal interest, insofar as aviation is concerned, is airfreight. That's why *Fifty Years of Powered Flight*, to me —and probably a few others like myself— does not really tell the full story of the past half-century. Yes, gentlemen, your compilers—or the sources they contacted for all your valuable information—were obviously of another turn of mind. Please don't feel too bad about this. You'd be surprised how many important Government figures and even aviation executives betray a lack of complete information.

I went through your booklet rather thoroughly. Let me compliment you on its make-up and the mass of wonderful information your people have been able to gather. As a matter of fact, I counted exactly 877 different items, spanning the years 1903 and 1953. And while counting them, I read them; and because I happened to have a sheet of paper and a pencil stub nearby, I also wrote some notes. (May I mention parenthetically that you give two separate dates as the official end of the Berlin Airlift? One is May 11, 1949, and the other September 30, 1949.)

Comb as I might, I haven't been able to find more than seven separate items relating to airfreight (including the double reference to the termination of the Berlin Airlift) among the 877 in your booklet. If my arithmetic is correct, that would figure out to about .008% of the total aviation information. Ah, yes, there is a reference to air express; and if I included this with airfreight (heaven and REA forgive me), the latter percentage would rise to .009%.

Your compilers were correct in including among the historic items the opening and closing dates of the Berlin Airlift. To be sure, Operation Vittles proved that a city could be sustained entirely by air for an extended period of time. But what happened to the Pacific Airlift? Why the discrimination against an operation which dwarfed the Berlin lift, and which, in a major sense, kept the Communists from overrunning South Korea? The three air routes from our West Coast bases were, respectively, 8083 miles, 6718 miles, and 5688 miles—and they were as busy as a bargain basement.

I observe that you have an item dealing with the Berlin lift's record day. I respectfully suggest a similar item concerning the Pacific lift. Further, you might recognize the individual achievements of our

(Continued on Page 16)

TWA Adds Cargo Flight

NEW YORK—All-cargo flight services flown by Trans World Airlines across the Atlantic have been increased by the addition of a second weekly all-cargo schedule. Effective since early April, the new flight leaves here for Paris every Tuesday and returns from Paris every Wednesday. This service is, of course, directly connected with TWA's transcontinental all-cargo flights, providing single waybill service for shippers between 60 cities in the United States and 21 points on the carrier's international routes. Besides increasing its cargo capacity by the addition of this new service, TWA has noted a volume increase of 7.5% in 1952 over the ton miles flown during 1951.

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Nelson Proposes New Plan

WASHINGTON, D. C.—Testifying before CAB examiners Ralph E. Wiser and Richard A. Walsh during the Board's Investigation of Air Services of Larger Irregular Carriers, Orvis M. Nelson, president of Transocean Air Lines, proposed a new concept of world-wide airline services. He called for private charter services, either individually or in groups, these to be limited to three trips per month between any two points. "Very strict rules" are necessary, Nelson pointed out, to insure the private character of charters.

Restrictions as to regularity of common carriage services perform a disservice to the public, according to Nelson, and therefore should be limited in frequency only to avoid diversion of traffic from airlines operating fixed routes. "Three trips per month," he argued, "is the minimum limit that will permit a needed supplemental service without creating diversion." TAL's plan of operation is the only realistic and workable one thus far proposed, Nelson believes.

LAN Buys Helicopters

SANTIAGO—Helicopters costing $135,000 each will figure prominently in the fleet of Chile's airline, Linea Aerea Nacional (LAN). To be used as a taxi service between this city and Valparaiso, the rotary wing craft will be used also in the event of forest fires, maritime disasters and in searches for missing persons. The possibility of LAN's acquiring jet transports has also been mentioned, but this would not come about in the near future, the company stated.

Congratulations

AIR FRANCE: With the establishment of a new post for interline and agency activities, it became necessary to secure the services of an able executive for the job. Peter B. Mellon, from Ottawa, was chosen for the office which previously was a part of the line's traffic and sales department. Setting up the new post resulted from the firm's expanding activities and a general increase in traffic.

Alaska Airlines: Former director of economic controls in Dallas for Braniff International, W. L. Walker has changed his home base as well as his firm. Now he is a treasurer of Alaska Airlines, according to an announcement made by Nelson David, president of the territorial airline.

Northwest Airlines: From training division instructor, Leonard C. Olson has been moved to the new position of director of operations department regulations and procedures section. In this job, Olson supervises all of the department's manual activities that before had been on a divisional basis. He has been with the airline for 10 years.

Panagra: James H. Stebbins, a vice president of W. R. Grace & Co., has been made a director of this airline. Associated with Grace since 1919, he has also been well acquainted with Panagra's activities in South America, having resided there from 1938 to 1947. Besides these two posts, Stebbins is a director also of the National Foreign Trade Council and a past president of the American Society of Peru.

Trans World Airlines: A leave of absence has been granted to Daniel P. Reid to allow him to fulfill his duties as general sales manager of Ethiopian Air Lines. Reid has been with TWA for the past seven years in San Francisco, but his new headquarters are now at Addis Ababa. Ethiopian, incidentally, connects with TWA at Cairo. TWA has no financial interest in Ethiopian, but it does provide certain personnel through a management contract.

Adds Bangkok to Schedule

MANILA—Besides shifting its operations from Frankfurt to Hamburg in Germany (see AIR TRANSPORTATION, April, 1953), Philippine Air Lines has added Bangkok to the portion of its route extending from this city to London. These two changes constitute the first for PAL since July, 1952, when both Zurich and Frankfurt were added to its flights. The carrier is also waiting for CAB approval on its application to provide service between San Francisco and Mexico City—the government of Mexico having already given its consent. With the approval by the CAB, PAL's international route will cover three-quarters of the world.

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AIRDOM

(*Continued from Page 14*)

allies in both lifts. The British effort to keep West Berlin going was known as Operation Plainfare.

I was happy to see mention of Henry Ford's freight line between Detroit and Chicago. That was almost three decades ago, wasn't it? But your compilers have failed to pick up the cue. There is a wonderful assortment of dates that can be picked up without too much trouble. For example: the inauguration of transcontinental airfreight on a non-scheduled basis; the inauguration of transcontinental airfreight on a scheduled basis; the inaugurations of transatlantic and transpacific airfreight; the organization of Air Cargo, Inc.; the consolidated freight tariffs; etc.

Truth to tell, some of your historic dates are somewhat on the marginal side, paling into insignificance when compared with some of the weightier items. Now this is no criticism; I fully realize that the levels of history are many and varied. However, it is for just this reason that I pause in wonder that your researchers have overlooked more than merely a few items of more than passing significance.

Over in England one of the airfreight outfits started a very successful car ferry to France. You might look into that. Did you ever hear of Air Beef, the Australian scheme to airfreight beef? It will open your eyes. Newspapers and news magazines are currently making extensive use of the airfreight services. But I think if your researchers were to go back a few decades to Europe they'll unearth the date of the first air shipment of newspapers. If my memory serves me correctly, it happened in Switzerland. And while they're at it, they may as well pick up the date of the first Air Edition of *The New York Times*.

About a year ago, in this space, I related the story of how the airshipment of North American baby chicks to South America revived that continent's long-dormant poultry industry. I would suggest a place for that item. And what about some mention of the longest flight of live animals? The first coast-to-coast shipment of fresh-picked produce? The wearing apparel industry's initial use of airborne labels in airshipped garments? The signal achievements of Lowell Yerex in Latin America? The air bridge from Westover to Thule? The establishment of the first airfreight terminal? The introduction of the domestic and international freight forwarders into the airfreight scene?

I've offered just a few ideas. There are more, I'm sure. How about looking into them?

As a note of consolation, I might add that other publishers suffer from this strange malady which could well be called "airfreight myopia." Concurrent with the publication of *Fifty Years of Powered Flight*, an enterprising and well-known publisher produced a picture book depicting the aviation history of the last half-century. Yes, you guessed it. There was only a single photograph of an airfreighter included.

read buy enjoy
BOXCARS IN THE SKY

Flies 220 Tons Weekly

BERLIN—About 220 tons of airfreight are now being carried weekly between the Allied zones of Berlin and Hamburg by Seaboard & Western Airlines. This marks the fourth time since July, 1948, that the carrier has been called upon to provide an airlift out of this city, the contract having been made with the Berlin Senate to do the job. In flying these operations, S&W increases by about 20% the airfreight capacity of some British freight carriers who at present fly about 155 tons of manufactured materiel between these two cities. This particular airlift, on which such items as electrical machinery and equipment, foodstuffs, cloth, medical supplies, glassware and optical goods are flown, has been in service for about 18 months.

By installing Pratt & Whitney R2000-7m2 engines on its all-cargo DC-4s, the airline has been able to increase each plane's capacity by 14%. The added power allows an increase take-off weight ranging from 70,700 to 73,000 pounds, and increases each payload to around 4000 pounds per round trip between the United States and Europe. These new installations are part of a $350,000 equipment modernization program upon which the airline had embarked.

Another program, hinging upon the CAB's decision to grant certification to the carrier, is in the offing. According to Carl D. Brell, vice president of operations, S&W is planning to operate 286 round trips between the United States and Europe during its first year of scheduled all-freight service. The company's *Super Constellations* would be used on these trips, which Brell characterized as "a pipeline operation between warehouses and depots on the Eastern seaboard of the U. S. and a centrally located European distribution point." The minimum schedule that would be published and adhered to would provide at least three round trips weekly with additional weekly trips scheduled as required.

Slick Gets Fourth DC-6A

BURBANK—While its possible merger with The Flying Tiger Line is still an unresolved issue, Slick Airways is forging ahead as one of the nation's two largest all-cargo airlines. As such, the company has recently received its fourth DC-6A, which increases Slick's airlift capacity by 12% and increases also, as the line's president, Thomas L. Grace said, "the airlift available to the country's shipping public." Two additional *Liftmasters* are expected to be delivered shortly, the company added.

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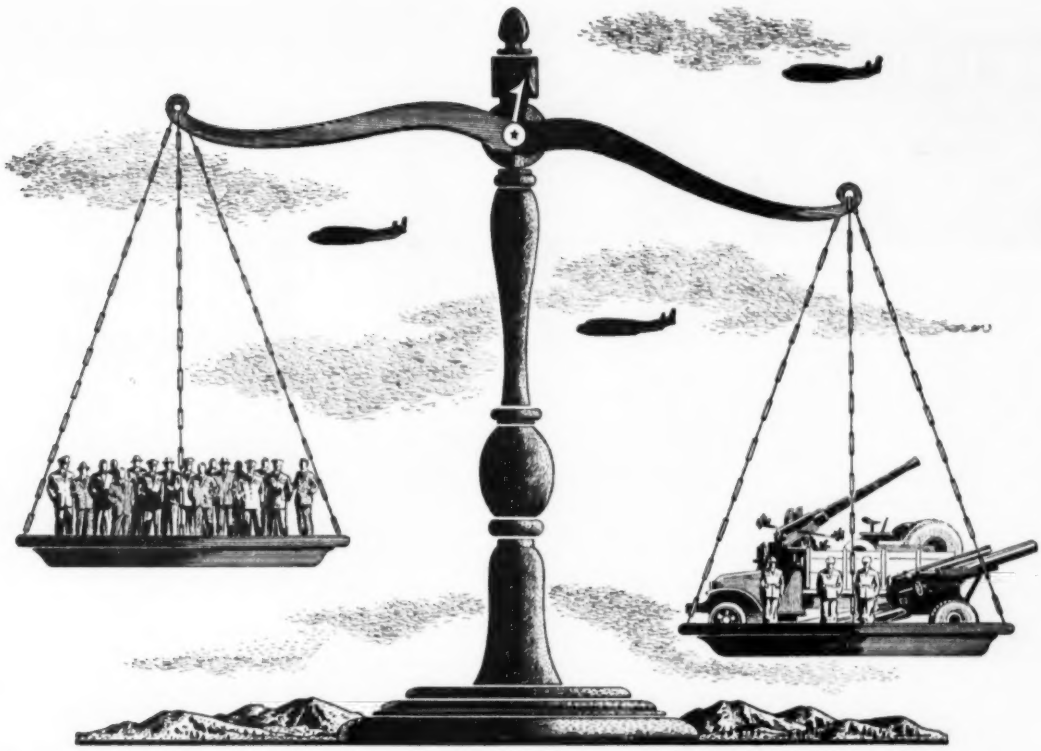

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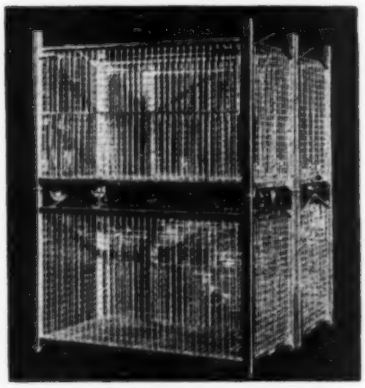
NEW EQUIPMENT FOR THE *Shipper & Carrier*

CALUMET STEEL CASTINGS CORP.: Airlines and airports alike will be interested in a new heavy duty aircraft wheel block designed to hold the heaviest of aircraft and loads with ease. A number of features make the Casteel Safety Wheel Block perfectly safe to use even under the most adverse conditions of grade, load and surface. These are a curved tread plate that offers better contact with the tire and better distribution, a heavy center rib support to resist maximum thrust, and heavy steel gripper teeth on the bottom plate to prevent creeping or slipping and provision in the block to hook or chain attachment. Sharp corners or surfaces have been eliminated to prevent accidental cutting or snagging of the tires.

Arrow Fastener Company: Heavier, longer staples can now be shot into insulation materials, roofing felt, batt wool and foil, etc., by Arrow's new T-50 Gun Tacker. The longer, carbon steel wire staples measure up to 9/16" leg length, and the gun offers smooth action and considerable driving power. It also features a patented non-clogging mechanism that prevents clogging or jamming, and another mechanism that permits dismantling for the removal of dust, dirt or grit for smoother operation. The gun is ideal for use wherever nails, tacks or staples are needed for tacking metals, canvas, protective linings, electrical wires and the like, having, in short, a wide application that will save time, labor and money.

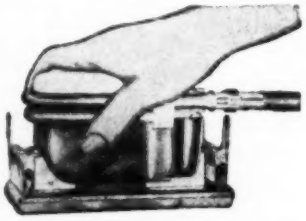
Electric Marketeer Manufacturing Co.: Farmers and ranchers have long used the firm's Tote Trucks, which now are being offered for industrial use as well. These operate on electric power supplied by special batteries. Two-wheel differential drives offer smooth power, and their three-wheel design gives them a short turning radius. Of half ton capacity, the trucks have six speeds forward and reverse. Operating costs, including depreciation, is said to be not more than three cents per hour used. The batteries, incidentally, can be recharged over night simply by plugging them into an electric circuit.

Equipment Manufacturing: Instead of using corrugated sheet metal on the sides, the firm's new stacking type material handling box has, as the picture shows, wire fabric to decrease weight. Wire fabric on the bottom of the box



allows ventilation and drainage, while the stacking caps on the self-centering corner posts permit quick and easy lift truck tiering for the conservation of floor space. The models shown stacked here have a weight capacity of 4000 pounds each and a content of about 30 cubic feet each. They come available in various meshes and sizes, according to load requirements, and can also be provided with lifting hooks for crane handling. The aluminum paint finish is standard.

Detroit Surfacing Machine Company: Only four pounds in weight, and with a smaller than palm-size grip, the



Model J-R airpowered Easy Finisher is quite comfortable to handle and to use. Features of this sander consist of an automatic mist-type spray for wet sanding, an abrasive holder for attaching several sheets of sand paper at one loading, and 4500 strokes per minute on only 50 to 60 pounds of air pressure. For years, Detroit Surfacing has worked to develop a light weight, single-pad finishing sander with no objectionable vibration. With its Model J-R, the firm feels fully satisfied that it has the machine that should prove most popular on the market.

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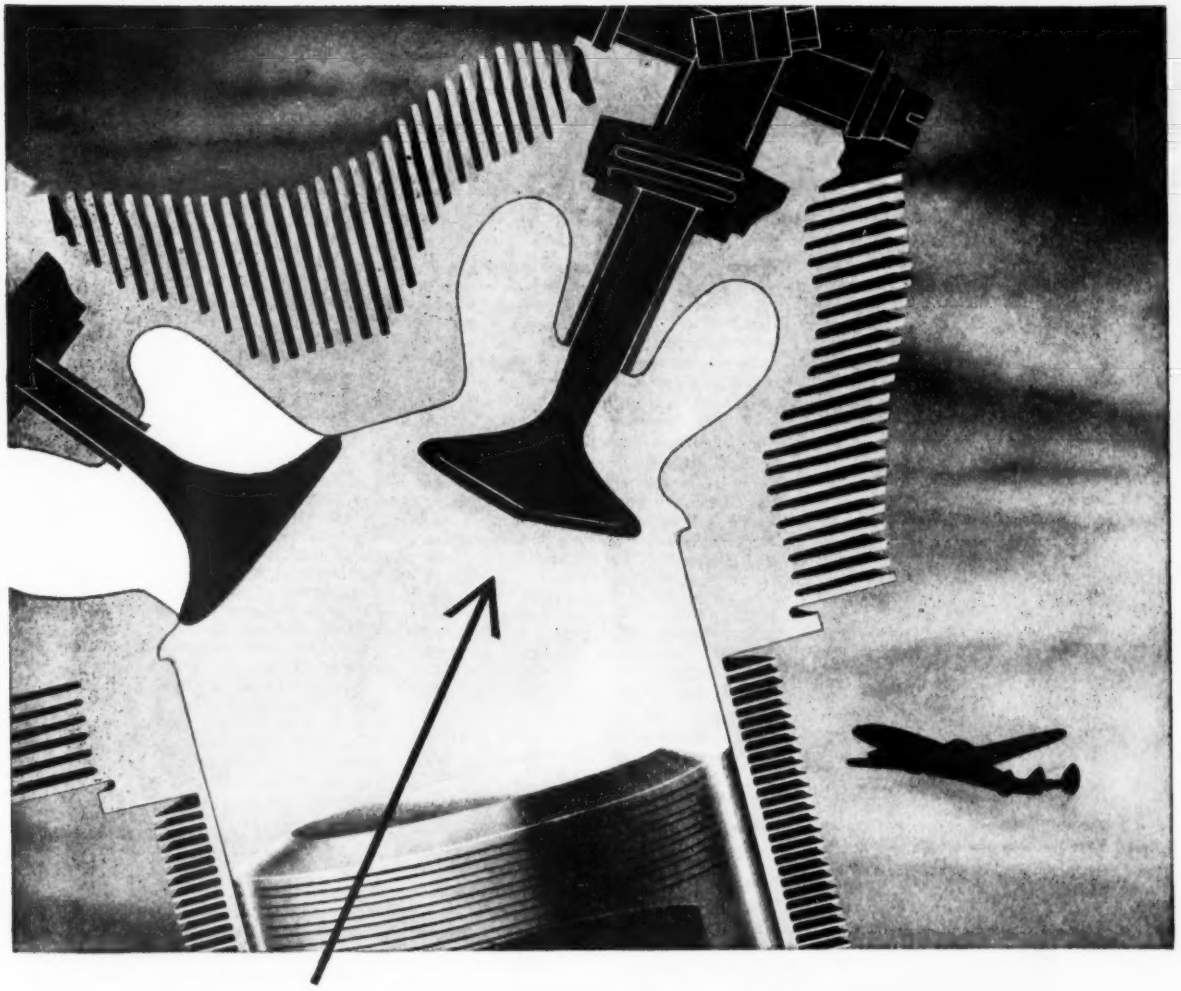
Super Connie Gets OK

BURBANK—After only one production flight, the first commercial turbo-compound transport, Lockheed Aircraft's turbo-prop version of its *Super Constellation* series was stamped "OK" and sent out to begin its tests for certification. The first turbo-compound versions of this transport, designated by the U. S. Navy as R7V-1s, have already been delivered for use on the transatlantic routes of the Fleet Logistics Air Wing and over the Pacific by the Military Air Transport Service. Two *Constellations* have been delivered here for interior modifications. Both of these belong to BOAC.



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But it needn't be! Valve clearance trouble, with resulting fuel and power waste, is easily detected by the Sperry Engine Analyzer. By using vibration analysis to check each cylinder under normal operating conditions, valve clearances can be adjusted for smoother engine performance. Result . . . engines develop full power—run cooler—use less fuel—last longer.

Vibration analysis, exclusive with the Sperry Engine Analyzer, can be employed either in flight or on the ground. When using the Engine Analyzer, valve clearance can be easily checked at each inspection and overhaul—a profitable procedure for airlines and executive aircraft operators.

In addition to vibration analysis, the Sperry Engine Analyzer also provides detailed ignition analysis. It immediately detects, locates and identifies irregularities in aircraft power plants—either during flight or on the ground. Aside from saving ground maintenance time, the Engine Analyzer enables the flight engineer to maintain proper operating conditions at all times and prevents unnecessary component replacements.

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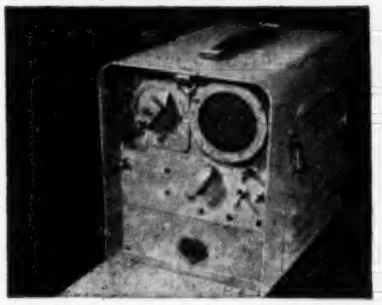

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Transatlantic Cargo Can Grow With Better Rates, Service—FTL

WASHINGTON, D. C.—Testifying at a hearing by the Civil Aeronautics Board into application for cargo certification over the Atlantic, George T. Cussen, vice president of The Flying Tiger Line, stated that the present volume of airfreight traffic flying over the Atlantic is "inconsequential" but that it can be developed "tremendously" with favorable rates and service.

Favorable rates, Cussen explained, would be about 24 cents per ton mile. The present rates of about double this figure, he referred to as "air express" rates, adding later that "if the rates are brought down, as we propose, the same proportionate results should be attained as we have experienced in domestic traffic." Domestic airfreight traffic has increased 417% since 1946, he said.

Questioned as to what FTL would do to develop the potential air cargo traffic, Cussen declared that, besides dropping the rates, the company would put modern DC-6A cargo planes into service, offering space thereby for handling bulk traffic rather than the package traffic to which shippers are largely limited today. That bulk shipments have a place in air cargo, he proved by pointing out that the average Tiger shipment weighs more than 400 pounds and that 57% of the carrier's domestic revenues come from shipments that weigh more than 1000 pounds.

As to whether the company would join IATA should certification be granted, the answer was that "we would, providing the IATA rates are brought down in freight classification to what we regard as reasonable." Pan American's recent stand on reducing rates on bulk shipments by 45% (see AIR TRANSPORTATION, April) was regarded by FTL as "reasonable."

Loss in Volume

Loss of air cargo volume by the combination lines was attributed to their neglect of the airfreight business. The development of freight traffic requires a "cargo specialist" and the setting up of freight operations under separate management, resisting the temptation to put freight on passenger aircraft. The Tiger's domestic airfreight operations were considered profitable in spite of the fact that the company is still putting a great deal of its money back into the development of its domestic routes.

While still awaiting a favorable decision from the CAB concerning transatlantic cargo operations, FTL has added another C-54 transport to its fleet. The plane was leased by the company from Trans Caribbean Airways for two years.

see your
freight forwarder or

NORTHWEST AIRLINES Short route to the Orient

BOOKS

POPULATION increases to a much greater extent than does the world's supply of food. That, together with the devastation wrought by wars, makes the food supply for an incredibly great proportion of the world's peoples far from adequate. These facts, though not surprising, have not been appreciatively alleviated, and the **Second World Food Survey,** prepared by the Food and Agricultural organization of the United Nations, lists the facts and figures, failures and successes behind the hard struggle to increase agricultural output all over the world. Though somewhat specialized, the report does not fly above the head of the average reader. (Columbia University Press, 2960 Broadway, NYC; 59 pages; $.50.)

There is hardly a recipe in the entire book that looks like a recipe. What you get instead is a running commentary concerning cooking, eating and the history of some excellent and often rare dishes. To be sure, the recipes found throughout William Wallace Irwin's fascinating cook book, **The Garrulous Gourmet,** are all appetizing, but the commentary all but steals the show, and the foreword prepared by comedian Fred Allen makes this book one of the most entertaining of its type. For many years Secretary of the American Chamber of Commerce in France, Irwin is an authority on French food and an entertaining guide to the culinary arts. As Fred Allen commented, "I am sure you will agree that **The Garrulous Gourmet** is the Book of the Month for your stomach." (The McBride Company, 200 E. 37th St., NYC; 208 pages; $3.95.)

With suggested readings listed at the end of each chapter to give the reader a more comprehensive view of the transportation picture, Prof. Russell E. Westmeyer's book, **Economics of Transportation,** is a valuable book to have. Owing to the increasing complexity of transportation and freight forwarding, no one book can answer all the possible questions that often arise, although Westmeyer's book probably comes closest to doing this. Part One fills in the background, Part Two concerns railroad transportation, Part Three highway transportation, Part Four domestic water transportation, Part Five air transportation, etc. A big book, fully indexed and documented, it also contains two large, handy maps in back, one picturing the country's air transportation system, the other the country's railroad net. (Prentice-Hall, Inc., 70 5th Ave., NYC.; 741 pages.)

Tremendous research in German and foreign sources have gone into the making of Walter Goerlitz' monumental **History of the German General Staff.** A vital book in the light of current events, it deals with the Staff's beginnings in the Thirty-Year War to Germany's surrender in 1945, a great portion of which was due to Hitler's hostility towards the Staff and his complete destruction of it. Recently published in this country, the book has already won renown as the standard work in the field. Certainly, it is a dramatic representation of the life and death of a mighty force. (Frederick A. Praeger, 105 W. 40th St., NYC; 508 pages; $7.50.)

Mr. A. Tee Presents FACTS and FIGURES

AIR FRANCE: From its headquarters in Paris has come word that in 1952, the company had flown 34,486,800 ton miles of air cargo, an increase of 22% over the previous year's figures. No new planes had been added to its fleet, this increase having been flown with the same aircraft that had operated during 1951. This year, however, additional aircraft—*Comets*, *Viscounts* and *Super Constellations*—will be flying over Air France's routes.

Douglas Aircraft Company: Sales during the fiscal year 1952 came to $522,619,409, according to the annual report, reflecting a gain of 132% over 1951. This figure also reflects a gain in production which is keeping pace not only with growing military commitments, but also with the rate of expansion in the aviation industry itself.

Glenn L. Martin Company: Sales for the year amounted to $143,999,382, whereas for the previous year the figure read $68,480,519. Net income came to $5,808,312, equal to $3.03 per share on 1,913,974 shares outstanding. With these figures, the company returned to profitable operations. During the year also, Martin was able to reduce its debt by more than $26,000,000. All loans and commitments with Reconstruction Finance Corporation were either retired or cancelled.

Northwest Airlines: During February of this year, the company chalked up some interesting increases in most of its departments. Total revenue miles came to 1,831,248 (last February: 1,463,308, including Leap Year Day). Total freight ton miles came to 791,202 (last February: 746,313). Passenger miles flown also increased, but a slight decrease was observed in the amount of mail and air express ton miles flown.

Seaboard & Western Airlines: During 1952, total revenue uplift increased 11% over 1951 for its commercial and military flights over both the Atlantic and the Pacific Oceans. Revenue miles increased 13%—6,940,634—in 38, 257 flight hours, 16% more than in 1951. Eastbound load factors averaged over 90%, S&W noted, adding that Western European nations airshipped their materials to American markets via S&W approximately 54% more than they did the year before.

Western Air Lines: Net income for last year came to $1,232,114 or $1.72 per share. The share earned from operations during 1951 came to only $1.42 plus an additional 52 cents from the sale of fixed assets. Operating revenues for 1952 were 14.2% over 1951. Passenger revenues were up 18.7%.

Jet Freighters 10 Yrs. Off

NEW YORK—According to Raymond A. Norden, president of Seaboard & Western Airlines, turbine-jet transports will not be used in transatlantic freight operations for at least 10 years. Rather, the next major development in the freight aircraft field, he said, would be turbo-prop aircraft, adding that the *Super Constellations* now on order from S&W are being built to provide for turbo-prop engine installations when they become available to commercial carriers.

In his speech given to the guests and members of the Mariners' Club of New York, at Fraunces Tavern here, Norden went on to say that "turbine-jet transports cannot compete favorably on a ton mile cost basis with conventional freight aircraft currently in production." Jet operation involves a sacrifice of payload for fuel requirement, he said, which may be worthwhile in passenger operations, but "payload and operating cost combine to dictate the basic economics of the unsubsidized freight operation."

Issues Announcement

NEW YORK—According to Acting Postmaster George M. Bragalini, articles in the Postal Union (regular) mails other than letters, letter packages and post cards are now acceptible for air dispatch to Burma. The postage rates are as follows: 90 cents for the first two ounces or fraction thereof, and 70 cents for each additional two ounces or fraction.

Baby Chicks Fly to Egypt

CAIRO, EGYPT—Through the combined efforts of the Technical Cooperation Administration and the Christian Rural Overseas Program, some 30,000 baby chicks arrived here by plane to their new home in ex-King Farouk's palace. Shipped aboard a KLM Royal Dutch Airlines all-freighter plane, the tiny 'passengers' formed the advance unit of a huge total of 100,000 baby chicks that will be sent here as part of the livestock development program being conducted by the above-mentioned agencies. Although the entire movement was designed to improve the breed of native poultry, actual distribution to the Egyptian farmer will not begin until 1954. For 1953, the full 100,000 will be used as seed stock, and about 75% of the chicks produced from this will be used for distribution.

Transfer Service Devised

NEW YORK—Saving several hours in the movement of airmail through the city's metropolitan airports is now effected by means of a new plan instituted by New York Airways operators of the helicopter mail service through this area. Under the auspices of the U. S. Post Office, NYA transfers the mail from one airline to another without processing through the airfield post offices. Thus mail coming from the West Coast, for instance, and destined for transfer to an East Coast airline would merely be moved from one plane to the other, a saving, through the elimination of processing, of considerable time in the movement of the nation's airmail. This transfer service, claims the 'copter airline, demonstrates a new and significant way in which the rotor wing aircraft can serve.

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Leasing Aircraft . . .

• The last of Eastern Air Lines' DC-3 aircraft—17 in all—were purchased for the purpose of leasing them to corporations for executive and business transportation as well as to airlines. Purchased by Leeward Aeronautical Service, of Fort Wayne, Indiana, some of the 17 are currently being changed to feature executive type interiors and have already been leased for executive use. Some also are being used by Leeward itself for charter work. The firm deals primarily in the sale and leasing of such aircraft, and it is believed that these 17 represent the largest group of this type ever to be offered on a lease basis to corporations and airlines.

Missouri Farmers . . .

• Since agriculture is big business, and farmers, like other businessmen, find it expedient to use air transportation, an organization known as the Missouri Flying Farmers together with the Missouri Airport Operators Association have presented an aviation bill that so far has been passed by the House of Representatives. This bill, House Bill No. 132, provides for the construction by the State of a system of low-cost landing strips. Having passed the House, it is now in the Senate awaiting approval.

Phone Service . . .

• Radio-telephones will shortly be featured on Bonanza Air Lines' entire fleet of planes. Some of the carrier's planes have already been equipped with these ship-to-shore telephones that enable a businessman to call any point in the United States while in flight. Thus the usually "dead" intervals, from a business standpoint, that are lost while the executive is in transit are eliminated by this new service.

Businessliner . . .

• By way of commemorating the fiftieth anniversary of flight, the Cessna Aircraft Company announces a new Businessliner known as the "Golden Year" model 180. Completely new, this all-metal executive transport comes equipped with an all-metal propeller, a Continental 225 hp engine and an attractive, streamlined appearance. This is a four-place plane that is quite versatile in performance, having a range of over four and one half hours and a cruising speed of 150 mph.

Expanding Market . . .

• Planes for use in private industry, an idea slow in taking root is becoming increasingly popular. To the constantly expanding civil aircraft market, Beech Aircraft has announced full intentions to devote as much effort as possible to the continued production of commercial transports this year. In doing this, the company has reaffirmed its faith in the personal airplane business and unveiled its new Model D35 *Bonanza*. Said Jack Gaty, the firm's vice president and general manager, "Personal and executive airplanes give their owners increased command over time and distance. Trips that would be impossible to fit into the schedule of busy executives become both practical and profitable via the time-saving direct skyways . . . It is our conviction that civil aircraft constitute an invaluable national asset."

Will Build Cargo Volume

DENVER—Air cargo traffic throughout the western portion of the United States is still undeveloped, but Frontier Airlines, which serves a large portion of this territory is intent upon building it up. In a communication delivered to AIR TRANSPORTATION, G. S. Kitchen, Frontier's cargo sales manager, noted, "Airfreight is a natural in the Rocky Mountain West where communities are widely separated and surface transportation poor." With terrain in the West favorable mainly for airfreight transportation, "we are making," Kitchen said, "every effort to build up our cargo business."

This plan has already had favorable results. Within the first six months of 1952, the carrier flew an increase of 52% ton miles of freight. In the previous year, AIR TRANSPORTATION learned, more than one-third of all the airfreight hauled by local service carriers went with Frontier. For this year, it appears probable that the growth of its cargo activities will be strongly influenced by the growth in the petroleum industry and in the new markets for perishable foods.

'53—THE BEST YEAR YET IN AIR CARGO

TCA Buys 3 *Freighters*

MONTREAL—Canadian all-cargo service will shortly be receiving a boost in the arm when the three Bristol Type 170 *Freighters* purchased by Trans-Canada Air Lines are delivered around September or October of this year. The Montreal-Toronto-Winnipeg route, over which TCA plans to fly these cargo aircraft, is considered the busiest in all of Canada. Besides their ordinary scheduled operations, the transports will be used also to supplement other services when especially heavy traffic develops anywhere else along the carrier's routes.

TCA last year had carried a record total of 14,206,000 pounds of air cargo on its domestic cargo and express services alone. Expectations for this year put the cargo total considerably above last year's figure. Among the cargoes to be carried in the airline's new cargo planes will most likely be heavy machinery, automobile, aircraft, radio and TV equipment, fish, flowers and fashions. The Type 170 that TCA has bought is currently in use in Canada, serving both Associated Airways and the Royal Canadian Air Force and proving itself admirably suited to the rugged task of hauling air cargo

Airfreight Wins Decision

WASHINGTON, D. C.—A decision has recently been handed down by the Interstate Commerce Commission rejecting the argument of the American Trucking Associations, Inc., and the trunk-line railroads that the ICC exemption for airfreight pickup and delivery service should be confined to the commercial zone limitations to which line-haul surface transportation is confined. Opposing the stand taken by the surface lines, Air Cargo, Inc., representing the airlines, claimed that these limitations were inappropriate for airfreight and that the exemption should extend to all cartage services performed by the air carriers under tariffs filed with the Civil Aeronautics Board. This was the view ultimately accepted by the ICC.

Sabena Flies Congo Pigs

LULUABOURG, BELGIAN CONGO — In an effort to relieve the distressed Belgian coastal areas, the people of this community have gifted the flood victims of Belguim with one dozen baby pigs. These represent the first of a consignment of four tons of live pigs to be shipped, free of charge, to Brussels by SABENA Belgian Airlines.

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1 A handsome, illustrated booklet containing all the information on the new hydraulic lift trucks developed for easy handling of heavy loads. 16 full pages of facts and pictures.

2 Information about a redesigned space heater now used by many airlines and in many airports is yours for the asking. The heater is portable and streamlined, and the bulletin leaves nothing unanswered.

3 *Speed . . . in Photo and Fact*, another of the interesting booklets depicting the particular values of air express.

4 24-page catalog in color illustrating the new line of Barrett hand lift trucks. Well illustrated.

5 Pictorial progress during 50 years in the life of the American Box Company, manufacturers of wooden and wirebound boxes and crates.

6 Sample back number of the *American Import & Export Bulletin*, giving news of developments in the foreign trade industry. Covers Customs, Commerce, Agriculture, Treasury, and State Departments thoroughly. Reports on changes in laws, rules, regulations, etc.

7 Illustrated and fully described in a six-page folder are facts for the shipper and packer interested in strapping, seals, tensioners, sealers and accessories. The products are for banding all types of packages, bales, boxes, pallets.

8 Bulletin 5191, illustrates and briefly describes the principal units in an expanded line of industrial trucks and tractors. The complete line is graphically presented in this attractive, four-page folder.

9 Here's a handy gadget being distributed by a prominent freight forwarding firm. It's a combination key ring and auto license holder which fits neatly into your pocket.

10 Both entertaining and educational, a 20-minute color and sound film is available to clubs, schools, business groups and television stations. It shows how business airplanes help industrial leaders save time. Highly informative.

11 A new eight-page specification booklet listing the advantages of the new fork lift trucks. Dimension drawings show their maneuverability; detailed specifications allow comparisons with other trucks. Complete in every detail.

12 *How To Help Your Post Office Help You*, a new booklet, copiously illustrated and designed to help accelerate postal service whenever necessary. It will prove timely and valuable to parcel post shippers as well as to users of regular letter mail.

13 For those whose trucks are a vital part of their business, a new, large, 16-page booklet is ready to help keep them rolling. Fifty-one illustrations with explanatory text will show you how to prevent truck failures and save on overhaul expenses.

14 Literature describing a new-type gummed tape dispenser which is operated like a telephone dial, measuring and cutting the tape accurately while moistening it.

15 A catalogue and descriptive booklet dealing with the classification, design and operating requirements of instrument bearing is now available. *Intended for instrument engineers only*, Booklet AIB gives descriptive details and dimensional data for a full line of instrument ball bearings. Highly technical and illustrated.

16 *Units of Weight and Measure, Definitions, and Tables of Equivalents*—a valuable 68-page book for all shippers. Handsomely put up with leatherette cover.

17 An attractive and valuable wall chart in color, showing the proper procedures in storing gummed tape, the use of automatic dispensers, and the application of gummed tape. Should be on the walls of all shipping departments. Illustrations tell the story in a glance.

18 Complete information concerning five new fork lift trucks is now available for all shippers interested in improving their line of trucks with an eye toward speed, efficiency and maneuverability.

19 Condensed catalogue #11 offers a complete line of scales for every industrial need. It's a handy, illustrated reference for scales that record weights from 1/64th of an ounce to 300 tons.

20 The best way to get out office mail faster, at lower cost and with more prestige is fully discussed and illustrated in a booklet aptly titled, *How To Get Your Mail Out*. Also included is a card for obtaining information on allied subjects.

21 Quite often shippers turn tourists, and if they've a mind to go to South America, Braniff has put out a sumptuous, multicolored folder that should prove helpful. Beautifully executed to whet anyone's appetite for South America.

22 A job study showing how an Albany manufacturer of cleaning products increased plant capacity 400%

GST* does so much for so little

***Gummed Sealing Tape**

with a carefully planned integrated handling system.

23 *Off the Cuff*, an informational magazine produced by a leading manufacturer of materials handling equipment. Well illustrated.

24 Descriptive brochure on the brand new book, *Boxcars in the Sky*, which tells the thrilling story of commercial and military air cargo, from A to Z. This volume is the first of its kind published anywhere.

25 For foreign freight forwarders and custom house brokers who find themselves vexed and bewildered because the courts of many countries interpret international trade regulations differently from those of the U. S., there's a new 32-page booklet out on foreign trade definitions that includes numerical conversion tables.

26 *Gourmet Guide to Good Living in South America*—a 55-page booklet which presents the business air traveler with all the necessary know-how relating to foods, restaurants, hotels, clubs, etc.

27 *What to Expect from Wirebounds* —an attractive booklet which presents the construction principles of wirebound boxes and crates. Includes 24 case studies.

28 *The Picture Book for Parcel Post Shippers* — an illustrated booklet explaining economies in metered parcels.

29 *Consular Documentary Requirements and Charges*, as prepared by one of the leading airfreight forwarding firms. Valuable for international shippers.

30 Latest issue of *Industrial Review* which highlights the advantages gained through the use of a certain specialized packing tape.

31 Latest issue of a valuable magazine which includes many useful tips on the use of steel strapping in packaging shipments. Well illustrated.

32 A chart showing step-by-step instructions for sealing Vs and W cartons with tape to meet Government specifications. Ten steps are depicted. Includes sealing a carton's innerliner and outer seams, and covering and protecting carton labels. A handy reference.

33 *Peggy and Mado*, an unusual comic-type booklet which does a terrific job explaining how a four-week vacation can be spent in France.

34 Here's the very latest issue of the New York State Airport Map and Directory. This is a revision of the last map offered in these columns.

35 Just about everything the airfreight shipper has to know about tariffs. This new, revised list is designed to simplify the finding of facts necessary for shipping. Approved by the CAB.

PAL Signs New Pact

MANILA—Two companies — Philippine Air Lines and Aer Lingus—have signed a general sales agency agreement. By the terms of this pact, Aer Lingus will act as general agents for PAL in Ireland, while PAL will act in the same capacity for the Irish airline in the Philippines.

Tells of Potential Volume

WASHINGTON, D. C.—Proof that certification of all-cargo lines operating over the Atlantic is economically feasible was presented by Rouvim J. Feiguine, director of economic planning for Seaboard & Western Airlines. According to Feiguine, the countries of Western Europe and the Middle East have 55,000,000 pounds of goods immediately available for air shipping to the United States. Airlines offering freight service to these areas, he continued, in the hearings presented before CAB examiner Herbert K. Bryan, would find immediately available another 47,000,000 pounds of airfreight in the United States for export shipments. This traffic, he explained, was based on the proposed rate structure and use of the *Super Constellation* freight transport currently on order by S&W.

Previous testimony had been offered by Prof. Oscar N. Serbein, Jr., assistant professor of statistics at Columbia University claiming that at least 102,000,000 pounds of air cargo would be available in the above-mentioned areas, based on the use of the larger aircraft and revised airfreight rate scales.

Lists Profitable Cargoes

SANTIAGO, CHILE — Two items from Chile continue to comprise profitable cargoes for Panagra. These are, in order of importance, chinchillas and gladiolas. Most of the shipments of the former are flown to the western portion of the United States, but several recently have gone to Florida, indicating that a market exists for the lush fur in the South. Shipments of the flower have also been gaining in volume, say Panagra's officials.

February Gain Cited

OAKLAND—A total of 2420 air express shipments were handled at the Municipal Airport here during the first three weeks of February alone. These represented an increase of 3.72% over those handled in the same period in 1952. Most of these—1451 in all—were inbound shipments, and the rest—969—were outbound. Gross revenue in this period was increased officials say, by 62.13%.

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Offers Plan to CAB

WASHINGTON, D. C.—In his testimony, recently concluded, before the Civil Aeronautics Board, O. Ray Chalk, president of Trans Caribbean Airways proposed a specific formula for future operations of large irregular carriers. In effect, the plan advanced by Chalk can be broken down into four major elements. These are:

1—Authorization to engage in "common carrier" flights in interstate, overseas and foreign air transportation, subject to certain limitations.

2—Authorization to engage in unlimited "bona fide charter flights" without limitation as to frequency, regularity or area.

3—A minimum initial period of five years for operation of this proposal, and requirements for establishing financial responsibility.

4—The elimination of the terms "irregular" and "non-scheduled" in favor of the terms "independent" or "auxiliary" to designate the group of air carriers to which Trans Caribbean belongs.

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Opens Boston Office

PHILADELPHIA—With the demand for improved performance in jet aircraft, guided missiles and helicopters broadening the research and engineering activities of the Aeronautical Division of Minneapolis-Honeywell Regulator Company, it has become necessary for this division to open a sales and service engineering office in Boston. The move, part of an expansion program was designed to provide better service to aircraft customers in and around Boston. The office is similar to the type recently opened here. In 1952, the company hit a new high with $165,710,384 in sales. Net earnings came to $9,081,003 after taxes, said President Harold W. Sweatt.

Lifts Record Load in Test

BURBANK—The Navy's new R7V-1, more familiarly known as the *Super Constellation*, has lifted the heaviest load ever flown by this type of transport, 145,000 pounds, or seven and one half tons more than its normal maximum take-off weight. Rated as the fastest transport in the country, the *Super Connie* is powered by four 3250 hp turbo-compound engines. The R7V-1 lifted this record load as part of a propeller test program at a desert airport in California. Civilian versions of the plane are currently undergoing flight tests, and first deliveries to the airlines are scheduled to begin this summer.

Buys Two More DC-4Bs

PORTLAND, ORE. — Two additional four-engine DC-4Bs have been purchased by Pacific Northern Airlines for its overseas routes to Alaska. According to the carrier's president, A. G. Woodley, the greatly increased cargo, airmail and travel volume to and from Alaska necessitated this purchase. "This high increase," he noted. ". . . indicates that business during the balance of the year will be greater than at any time in the history of the Company."

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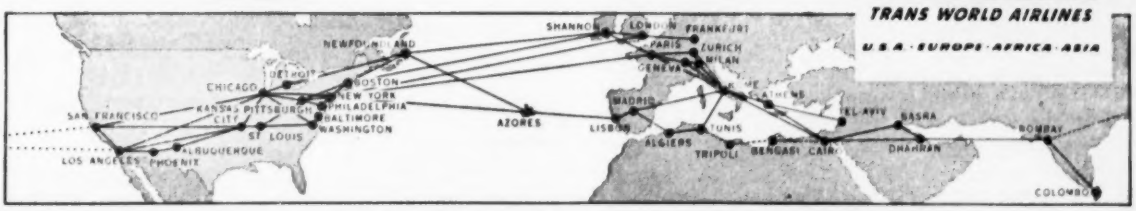


The DC Line of Transports

THE DOUGLAS COMPANY has always taken an active interest in air cargo and its development, finding it a source of satisfaction that its planes, with their successively increased capabilities have been an important factor in the growth of this industry. The story of that contribution is best told by the planes themselves.

In December of 1952 the DC-3 was the first converted for commercial all-cargo operation. Throughout the war years this aircraft carried over 90% of all commercial air cargo traffic. Although the most economical aircraft of its day, the inherent high operating costs of small capacity aircraft required a rate structure unattractive to the mass movement of goods.

The availability of surplus DC-4's following the war was a major factor in the birth of airfreight. The small initial investment permitted a rate structure lower than was otherwise possible for this size aircraft. Its inability to take full advantage of the wartime developments of super-charged engines contributed to its economic obsolescence.

The DC-6A was designed to incorporate the technical advances of the war and postwar years. At this time the rapidly growing all-cargo carriers required all available funds for expansion of flight equipment and ground facilities. And the combination carriers were still adjusting to postwar conditions. Therefore, the DC-6A, the first aircraft specifically designed for commercial cargo operations, was developed without benefit of customer commitments—indicative of the company's confidence in the future of airfreight.

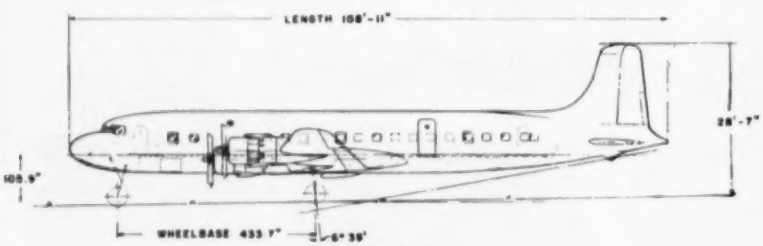
A good cargo plane is many things to many people.

To the shipper, the DC-6A permits overnight coast-to-coast service for the first time. Supercharged engines and cabin pressurization make over-the-weather reliability possible and insure safety for his perishables. The DC-6A's lift ability and large loading doors assure him accommodations for his mass and bulky shipments.

To the operator, its dual loading doors together with level floors and freedom from balance restrictions cut loading time to a new minimum. Service proven engines and airframe integrity minimize maintenance problems—a necessity for the efficient and economical utilization of today's small cargo fleets.

To the investor, the DC-6A represents the first commercial cargo aircraft that can be purchased new and operated at a profit under the existing rate structure.

This integrated design is the result of the long range planning which is essential to both the airframe manufacturer and the airline operators seeking an important role in this rapidly expanding industry.



Douglas' DC-7

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Slick Airways	6
Flying Tiger Line	7
American	3
KLM	2
Canadian Pacific Air Lines	2
Pan American World Airways	3
Sabena	2
Total	25

*In order of purchase

Despite its rapid growth in the past seven years there can be no doubt that air cargo is still in its infancy. How fast it develops depends on many factors—not the least of which is the swiftness with which rates can be reduced.

Increasing traffic volume will be a factor in permitting rate reductions. However, since the aircraft is directly responsible for approximately 65% of operating and indirectly influences many of the other cost items associated with cargo operations, it is apparent that further rate reductions await the development of more economic aircraft.

As in the past, significant increases in aircraft economy in turn await the development of more efficient power plants. Compound versions of present day reciprocating engines offer possibilities of rather modest increases in economy.

The next important increase in cargo aircraft economy will not come until the development of reliable turbine engines having low fuel consumption—notably the propeller-turbine power plant. At this time it is difficult to see the existence of a commercially acceptable propeller-turbine engine for several years to come.

In the meantime there is a job to be done—moving today's cargo today—in the most efficient and most profitable aircraft available.

Douglas believes the DC-6A, now flying or on order by the major cargo carrying airlines of the world, represents the soundest step yet taken toward low cost airfreight transportation.

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FOR THE FUTURE

(Continued from Page 4)

flies today, the principle of the telescopic wing will eventually be applied. Three patents have so far been issued, and one is pending.

How long it will take them to appreciate the principle involved and put it into practice is difficult to tell. But their opposition will eventually wear away as it has from previous innovations. With the acceptance of the overlapping telescopic wing and the double fuselage water-based transport, a new era will dawn in air transportation. For the purposes of defense and commerce, let us hope it comes soon.

IN THE CLOUDS

(Continued from Page 7)

are big cargo doors fore and aft to permit simultaneous loading and unloading; automatic conveyors able to pull 12,000-lb. loads; multiplicity of tie-down fittings; and pulley arrangements to shift cargo.

This plane is available today. The first of the big-door transports are already flying, with the turbo-compound type scheduled to flow from production lines in increasing numbers. The impact of these aircraft specifically designed as airfreighters will be felt immediately.

Lockheed has demonstrated continuing confidence in the future of air cargo by developing America's first transport to be built from the ground up for turbo-prop power. Even though the engineers feel that this plane—the C-130A—will be another major contribution to the air cargo field, they consider this aircraft a long way from availability for commercial use.

They feel that the most realistic view concerns immediate equipment modernization and improvement.

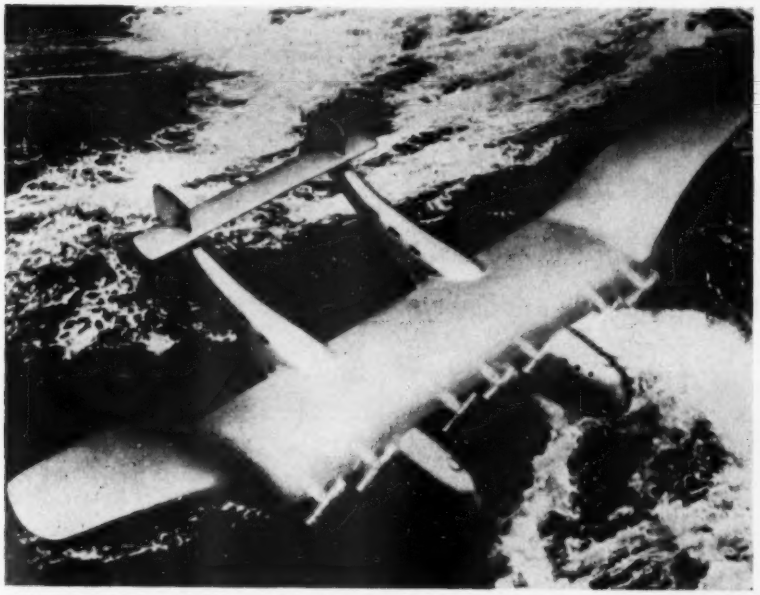
The 1049B (130,000-lb. gross takeoff weight) and the 1049D (133,000-lb. takeoff) are built with plentiful mar-

gins of structural strength for installation of turbo-prop power plants as they become available.

The first turbo-prop *Super Constellations* were ordered by the U. S. Navy, and already the basic aircraft are well along in assembly. Minor modification for turbo-prop engines will be accomplished at Lockheed Aircraft Service.

Power-growth potential of the current airplane permits extended periods of amortization; and the plane has profit-making capacity from the day of its delivery. Lockheed cargo specialists call this feature the first "obsolescence insurance" ever built into an airplane—a guarantee to the shipper of continued speed and to the airline operator of continued economy.

FLYING SHIP



Unique in design, but practical in theory is this Catamaran Flying Ship, a seaworthy aircraft weighing about 300 tons. The double hull assures stability in a rough sea and more cargo space than is available on present type aircraft. Cost of building this plane would be approximately that of a B-36, and construction time for the prototype model would be only about nine months. It may well be the cargo plane of the future.

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GROWTH

(Continued from Page 8)

potentials to the military. This was the XC-120 *Pack Plane*, designed on the detachable cargo compartment principle so that a parent plane might change compartments as easily as a highway tractor switches trailers.

The XC-120 was primarily a C-119B —with one major difference. The bottom two-thirds of the cargo fuselage actually was a separate unit, which could be detached from the top section and hauled away. What was even more radical, the plane could fly *without* the cargo pod.

Two Pratt & Whitney R-4360-20W engines of 3500 horsepower each, gave this *Pack Plane* a take-off gross weight of nearly 74,000 pounds and a 1500-nautical-mile range with a 10,500-pound load.

The XC-120 was built as a prototype to be used for testing a number of different theories and principles of a detachable fuselage airplane. During the past year, Fairchild has built and tested two different pods for the XC-120, including a "roadable pack"

which can be towed over the highway like a standard freight trailer, rolling on conventional truck-type wheels or even secondary roads.

This airplane has been widely hailed as an entirely new concept of air transportation, for this principle of the detachable fuselage may offer the first real answer to many of the most pressing problems of military logistics.

As an alternate to unloading the pods, they themselves can consist of built-in units and be ready for full-scale use as soon as they land. Fairchild engineers also have designed this unit with an eye toward possible civil applications. With its truck-type wheel assemblies, the pack can be loaded at a distant warehouse or freight dock, towed to an airport, and attached to a mother ship, ready for delivery anywhere within the airplane's cruising range.

IN the C-119, the Combat Cargo Command had introduced a brand-new airplane to the war theater. Probably never before had a plane type had such a rapid transition from the production line to combat. In their two and a half years of action in the Far East, *Flying Boxcars* have carried just about everything. Only a partial listing of their cargoes would include large fork-lifts, a complete asphalt paving unit, bulky 19,000-pound wire rolls, a completely equipped fire crash truck, big

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ARGENTINA	$1.51	$0.76	44	FINLAND	$0.88	$0.51	44	NORWAY	$1.02	$0.47	44
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AUSTRIA	1.05	.49	22	GERMANY	.95	.45	22	PHILIPPINES, Rep. of	1.81	1.26	44
BELGIUM	.98	.43	44	GT. BRITAIN & NO. IRELAND	1.00	.41	22	POLAND	1.06	.52	44
BERMUDA	.76	.13	22	GREECE	1.07	.57	22	PORTUGAL	.71	.44	22
BOLIVIA	1.08	.40	44	GUATEMALA	1.01	.25	44	SAUDI ARABIA	1.56	.77	22
BRAZIL	1.48	.64	44	INDIA	1.70	.96	22	SPAIN	1.21	.45	11
CHILE	1.31	.56	22	IRELAND (EIRE)	.97	.37	11	SWEDEN	.85	.49	44
COLOMBIA	1.21	.40	44	ISRAEL, STATE OF	1.42	.67	22	SWITZERLAND	.92	.46	44
CUBA 8 oz. min.	1.10*	.15	22	ITALY	1.08	.50	44	SYRIA	1.22	.64	44
CZECHO-SLOVAKIA	.88	.48	44	JAPAN	1.27	.91	22	TURKEY	1.15	.57	44
DENMARK	.97	.47	44	LUXEMBURG	.98	.43	44	UNION OF SO. AFRICA	1.31	.94	11
ECUADOR	1.24	.33	44	MEXICO	.64	.18	44	URUGUAY	1.26	.76	44
EGYPT	1.35	.64	22	NETHERLANDS	.89	.44	44	VENEZUELA	1.27	.36	44
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ARGENTINA	.10	$0.58	$0.38	IRELAND (EIRE)	.15	.39	.18	NORWAY	.15	$0.43	$0.23
AUSTRIA	.15	.45	.24	ISRAEL, STATE OF	.25	.52	.31	POLAND	.15	.46	.25
BELGIUM	.15	.42	.21	JAPAN	.25	.65	.45	SAUDI ARABIA	.25		
BERMUDA	.10	.27	.06	MEXICO	.06 per oz.	.30	.09	SPAIN	.15	.43	.22
BRAZIL	.10	.55	.35					TURKEY	.15	.49	.68
EGYPT	.15	.52	.31	MOROCCO (FRENCH)	.15			URUGUAY	.10	.58	.38
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three-ton generators, radio transmitting stations, Navy patrol boats, artillery observation planes, jet engines, stripped-down bulldozers and prefabricated buildings. Since the first appearance of the XC-82, wingspan of Flying Boxcars had remained about 106 to 109 feet, and empty weights had risen from 26,530 pounds for the XC-82 to 39,832 pounds for the C-119C. Wing design, too, had remained fairly constant.

Late in 1951, Fairchild received permission to take a C-119 from the assembly line and convert it into a newly designed airplane to be known as the

C-119H. Modification was started, and by last Spring, the "H" was ready for flight testing. While the basic designation was the same, this *Flying Boxcar* was so vastly different from its predecessors that it was virtually an entirely new version of the C-119. When it rolled out of the experimental hangar, the C-119H had a new wing of completely different design, a wing that offered some 40% more surface. The big change in wing design and size called for alterations in the empennage, and the tail surfaces were modified accordingly. Longer booms gave the C-119H an over-all length of more than 95 feet, as opposed to the previous length of 86 feet.

Probably the most noteworthy difference between the "H" and earlier C-119s was the new application of external fuel tanks, carried in two pods mounted beneath the wings.

Power for this prototype C-119H is furnished by two Wright turbo-compound engines of 3500 horsepower each. The plane has a design gross weight of 80,870 pounds and a maximum gross take-off weight of 85,900 pounds. The C-119H made its first flight on May 27, 1952, remaining aloft for more than two and a half hours. Its flight-testing program showed that this new plane was even better than expected. At normal gross weight, the "H" can take off and clear a 50-foot obstruction in less than 2300 feet, and land over the same obstruction within less than 1750 feet. For the aerial delivery of personnel and cargo, the plane can slow to a speed of less than 70 knots, amazingly low for an aircraft of this size.

In the period following World War II, the Army Field Forces immediately undertook, at the instigation of General Jacob L. Devers, the massive logistics problem of redesigning sections of the Army so that they could be transported into combat by airplane. At the outset, the C-82 *Packet* served as the vehicle around which these studies primarily were developed. The C-119 obviously was even more effective in satisfying the needs of an all-airborne Army, admitting that the full attainment of this goal is still some distance in the future.

These "trucks of the air" opened new horizons for tacticians, just as their ancestors in the Fairchild family line had opened the bush country in Canada, Alaska and South America, and had lugged cargo and passengers through Andean passes into which few other aircraft of the time were competent to venture.

Today they form the backbone of a new instrument, born out of a war, but with an as yet incalculable civilian future—the airlift. As the only medium cargo transport yet in production and in action, they serve as the instruments through which an entirely new theory of transportation is rapidly and successfully developing.

★ ★ ★ ★

PORTRAIT

(*Continued from Page 10*)

The possibilities of such a proposal were more than attractive. It would mean fewer items for air bases to stock. Maintenance and flight crews would need to be trained in fewer airplane types. And manufacturing would be brought to a new level of efficiency.

So, shortly, the Army asked for a design proposal for the new cargo transport, and in January of 1943 the first C-97 contract was approved, calling for three experimental airplanes.

The Boeing XC-97 made its first flight Nov. 9, 1944, and less than two months later made a non-stop dash from Seat-

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tle to Washington, D. C. in 6 hours and 4 minutes—a record for transport type aircraft that still stands—averaging 383 mph for the 2323 miles and at times clocking ground speeds as high as 448 mph.

Upon completion of the first three experimental airplanes an Air Force contract was awarded Boeing for 10 service test *Stratofreighters*, the first six of which were built almost identical to the original XC-97's with the exception of improvements in radio and engine cowling arrangements and some installation refinements.

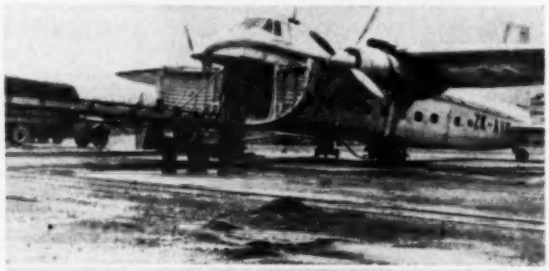
The next four, however, and all subsequent models, became as nearly as possible, twins to Boeing's newly-developed B-50 Superfortress. The B-50 was more than an improved B-29; it was 75% a new airplane, and the new Stratofreighter matched the advances system by system, with only the outside dimensions and basic loading facilities remaining the same.

The two new airplanes retained the B-29's famous "117" airfoil section but the new wings—utilizing new metals and refined internal design—were 16% stronger and 26% more efficient while weighing 650 pounds less than the B-29, XC-97 wing.

Engines also were new, a power boost of 59% being provided by installation of 3500 horsepower Pratt & Whitney Wasp Majors. The height of the vertical tail was increased by five feet to accommodate the extra power.

The interior of the new double-decked transport—from the earliest model to today's KC-97F—is designed to combine the maximum of space utilization with cargo handling ease. The upper deck cargo compartment, largest in the airplane, is 78 feet long. Huge rear "clam shell" loading doors were designed to enable objects as long as 61 feet to be loaded into this compartment quickly and simply. Cargo can be hoisted through these doors from the ground or from trucks by means of a self-contained electric-powered single-rail hoist. Once aboard the airplane the cargo can be traversed the length of the deck and swung into its allotted space by the same means. Vehicles—trucks, light tanks, ambulances and artillery—can be loaded by their own power. A self-contained ramp which can be extended through the "clam shell" doors to the floor of the upper deck makes this type of cargo especially efficient to load and unload. All but the first several C-97 models are equipped with an additional large load-

CARGO LOADER



CARGON—In New Zealand, a new loading device is being used that allows a cargo plane to discharge six tons of cargo, take on another six tons and leave within little more than 20 minutes. The new device is called Cargon, which consists of two railway tracks set into the ground at about 30 feet apart. On these are mounted two platforms, or 'traversers', which in turn hold the cargons, or trays, that carry the cargo.

To accommodate these trays, the normal floor of the Bristol *Freighter* shown here has been removed to allow the cargons to rest inside the hold on special lips. Upon arrival, the plane's nose doors, a traverser pulls up to take its load. As the traverser moves away, another pulls up loaded with outbound cargo that goes into the plane. Each tray carries three tons of cargo, and the *Freighter* can carry two of such trays at one time.

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ing door forward on the upper deck to facilitate cargo loading even more.

The two lower-deck cargo compartments are designed with doors at approximate truck-bed height. Ample headroom was provided within the compartments to keep the loading operation simple. In all, 6,138 cubic feet of usable cargo space were made available in the three areas. It is the versatility of these new *Stratofreighters* which makes them especially useful today.

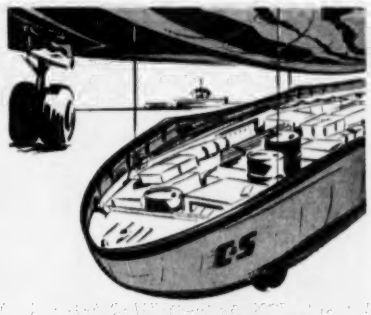
Interior and exterior views of the *Stratofreighter*.

As personnel carriers, they can carry up to 130 fully equipped combat troops; as flying ambulances, 79 litter patients, their medical attendants and supplies. On heavy equipment ferrying missions they can transport such loads as ambulances, 105 mm howitzers, a 155 mm howitzer, its ammunition, caisson and prime mover, 2½ ton trucks plus personnel, or combinations of these loads.

On one test flight a standard C-97A took off at a gross weight of 174,500 pounds carrying a useful load of 96,500 pounds—18,500 pounds more than the weight of the airplane itself. And the most recent versatile feature of the *Stratofreighter* is its use as an aerial tanker.

Today the airplanes are coming off the line as tankers, but convertibility to any of their other uses can be accomplished in only a few hours. For instance, a recent change from tanker to cargo ship was demonstrated to Air Force representatives and was accomplished in seven hours and 15 minutes. A switchback to tanker, including four hours and 40 minutes for functional check and adjustments of the tanker equipment, took exactly 10 hours and 16 minutes.

Additional models—a proposed tur-



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bo-prop version, for example—are in the offing, and several design proposals have been made by Boeing for advanced jet transports.

For the moment, however, the Boeing airplane production lines are still strictly for the military—C-97's in quantity at Renton, Wash., B-47 Stratojets at Boeing-Wichita, with added numbers of that same airplane due to be built by Douglas at Tulsa and Lockheed at Marietta, Ga., and the new B-52 eight-jet heavy bomber at Seattle.

* * *

AIRCRAFT FOR CARGO

(Continued from Page 9)

mid-Atlantic and East North Central States and also on the Pacific Coast, especially in California. About 64% of all air cargo traffic came from only 10 leading metropolitan areas, New York alone accounting for 17.6% and Chicago for 13.4%.

"All of this points up the fact," Morris commented, "that, because of the types of aircraft being utilized today, only those communities can be served that have elaborate facilities and a volume of traffic sufficient to justify terrific expenditures for ground crews and special ground-handling equipment.

"That's why we're satisfied that a plane of the C-123B type eventually will play an important role in the development of the air cargo potential. This Chase-designed plane is built to serve *any* community. It can be loaded and unloaded without any special equipment and there are no excessive manpower requirements. It can, and it will be, the instrument for transition from 'potential' to 'realized traffic.'

"It is the in-transit time that is important to shippers. The Chase design of the C-123B was developed with the express purpose of reducing in-transit time to a minimum because ground delays have been a particular deterrent to air shipments.

"We here at Chase can be counted with the others who are 'bullish' about the future of air cargo. Vast frontiers remain yet to be opened in this field. . . ."

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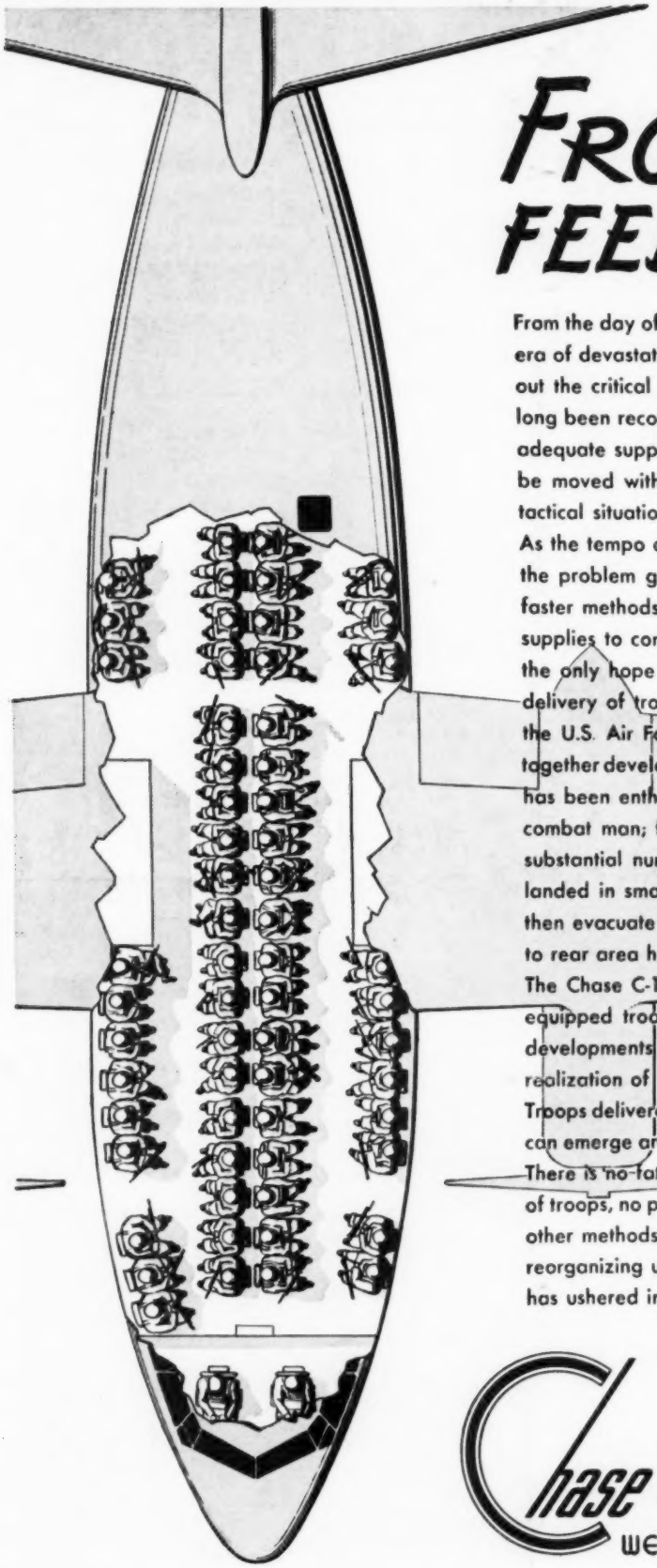

FRONT LINE FEEDER LINE

From the day of spear and shield combat to the present era of devastating weapons, military men have sweated out the critical problem of logistics. It has long been recognized that wars can only be won when adequate supplies of manpower and materiel can be moved with sufficient speed to meet any tactical situation.

As the tempo of warfare increased through the years, the problem grew more critical demanding newer and faster methods of delivering troops, weapons and supplies to combat areas. Firm in their belief that the only hope of solving this problem lay in the delivery of troops and equipment by air, the U.S. Air Force, Army and Chase Aircraft working together developed the assault transport. Its development has been enthusiastically received by the combat man; for today, fresh troops can be rushed in substantial numbers to forward combat areas and landed in small unimproved fields. The planes can then evacuate casualties direct from front lines to rear area hospitals.

The Chase C-123, capable of carrying sixty-one fully equipped troops, is one of the most significant developments in the history of aircraft and is a realization of what was but a dream a short time ago. Troops delivered into combat areas by assault transports can emerge an organized unit, fresh and battle-primed. There is no fatigue so common in overland movement of troops, no personal hazard as may be encountered by other methods of delivery by air and no time lost in reorganizing upon landing. The Chase assault transport has ushered in a new era in the history of aviation.

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